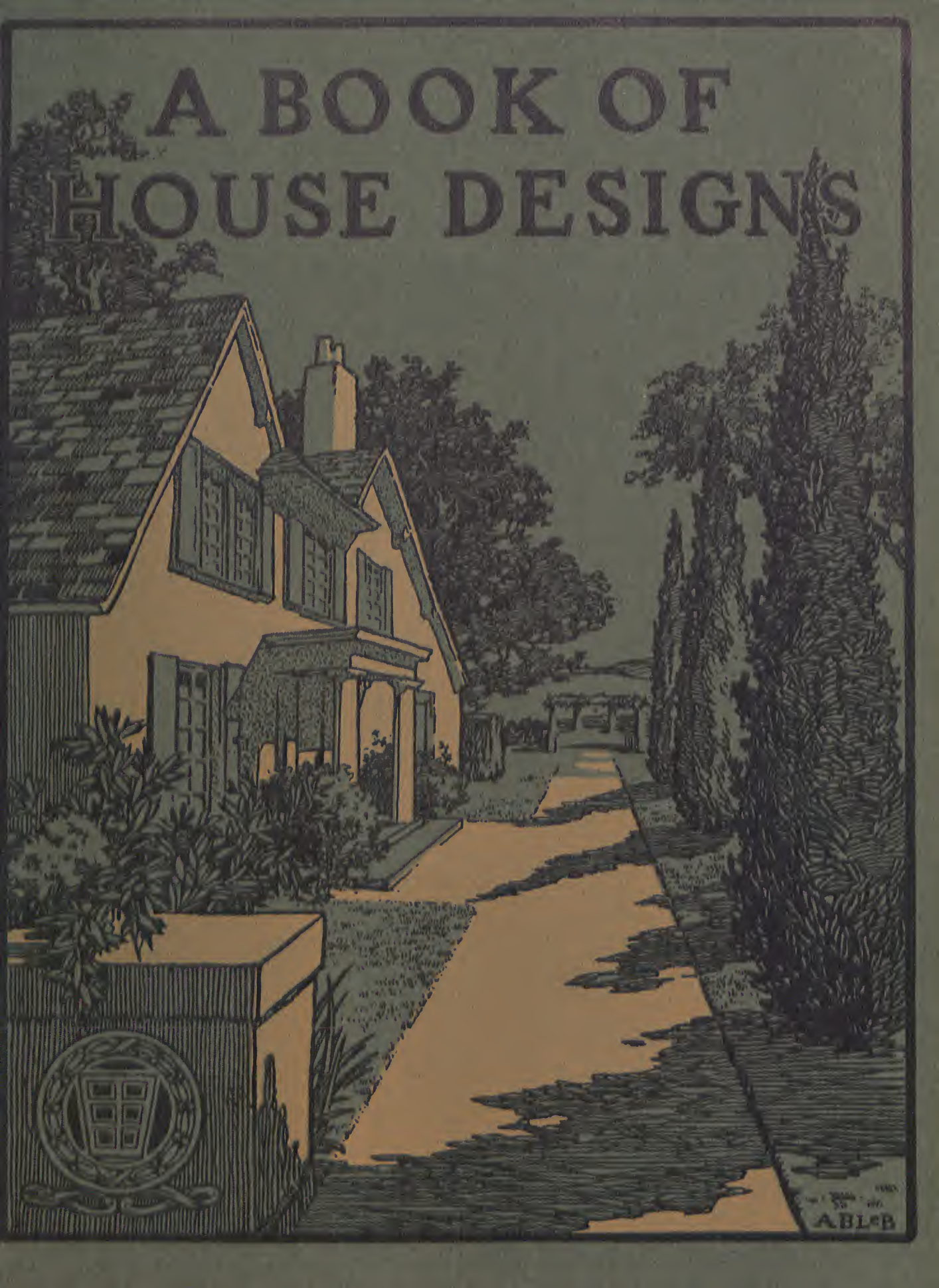
A BOOK OF HOUSE DESIGNS



A Book of House Designs

ATTRACTIVE
ECONOMICAL
DURABLE
FIREPROOF

PRICE, FIFTY CENTS

Published for the

NATIONAL FIRE PROOFING COMPANY

PITTSBURGH

BY ROGERS & MANSON, BOSTON

A House Built of Terra Cotta Hollow Tile

FOREWORD

ATTRACTIVE, economical, durable, fireproof — these are, or should be, the factors which deserve the greatest consideration by those who are about to invest their money in a new home as we shall call the house.

We present in the pages which follow a series of ideas and suggestions which will, we believe, be helpful to those who contemplate building, and who are enthused with the up-to-date spirit of securing a better class of houses than has ever been built in our country.

The designs shown were submitted in competition by men of recognized architectural ability, and the competition was judged by architects who are well known throughout the country. The value of these designs lies in the fact that they are up-to-date, are in all respects logical and reasonable, are refined and restrained. They are of the style which is not passing; time will only enhance their beauty.

While any style of house can be built successfully of terra cotta hollow tile blocks, these designs are especially suitable for this material, since the program of the competition called for a design to be built of tile with a cement or stucco finish.

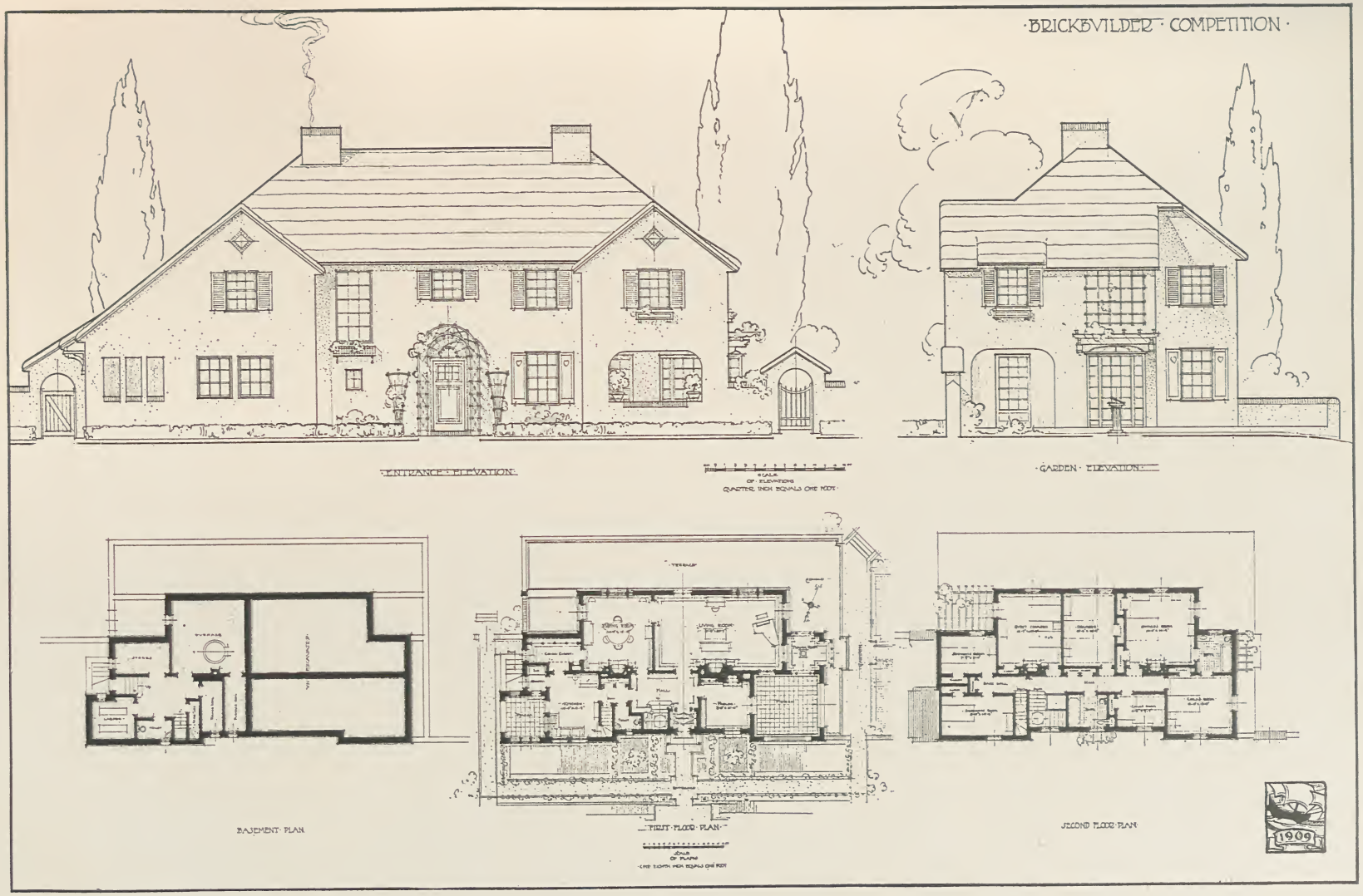
Some of the designs submitted provide for a brick veneer to be applied to the tile wall, and in this connection we may say that it is a very desirable type of construction; a little more expensive than the plaster finish but, nevertheless, preferred by some.

Questions which are likely to arise in the minds of some are: Is this a new and untried material? Has it been demonstrated that it will successfully meet the requirements in building construction? In answer we may say that burnt clay is one of the oldest known

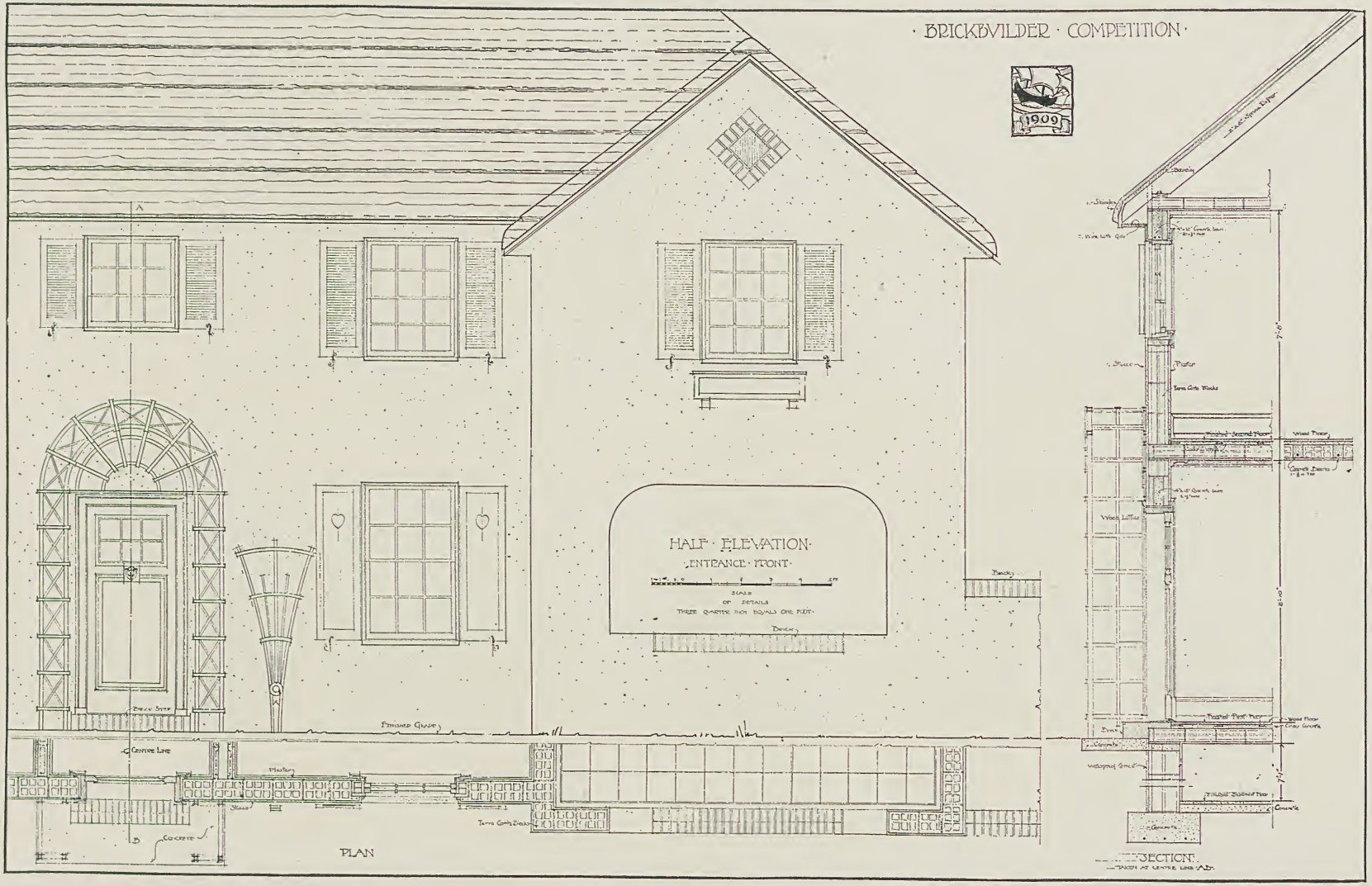
building materials, and walls built of it have stood for centuries without decay. Terra cotta hollow tile is but a form of burnt clay. It has been used in one form or another in most of the important buildings which have been erected in America during the last twenty-five years. It has been tried under the most exacting conditions and has not been found wanting. Within the past ten years many of the leading architects of this country have used it for walls of houses, and more are using it to-day than ever before. It is economical. It is imperishable. It is a little more expensive than wood; it is less expensive than other forms of masonry construction.

In another part of this book we illustrate a number of houses which have recently been built of this material. One of the illustrations is of a house built by an architect for himself. Houses of this type of construction are now to be found in almost every part of this country where good construction is known. Hundreds have been built and are being built in New England and in and about New York City.

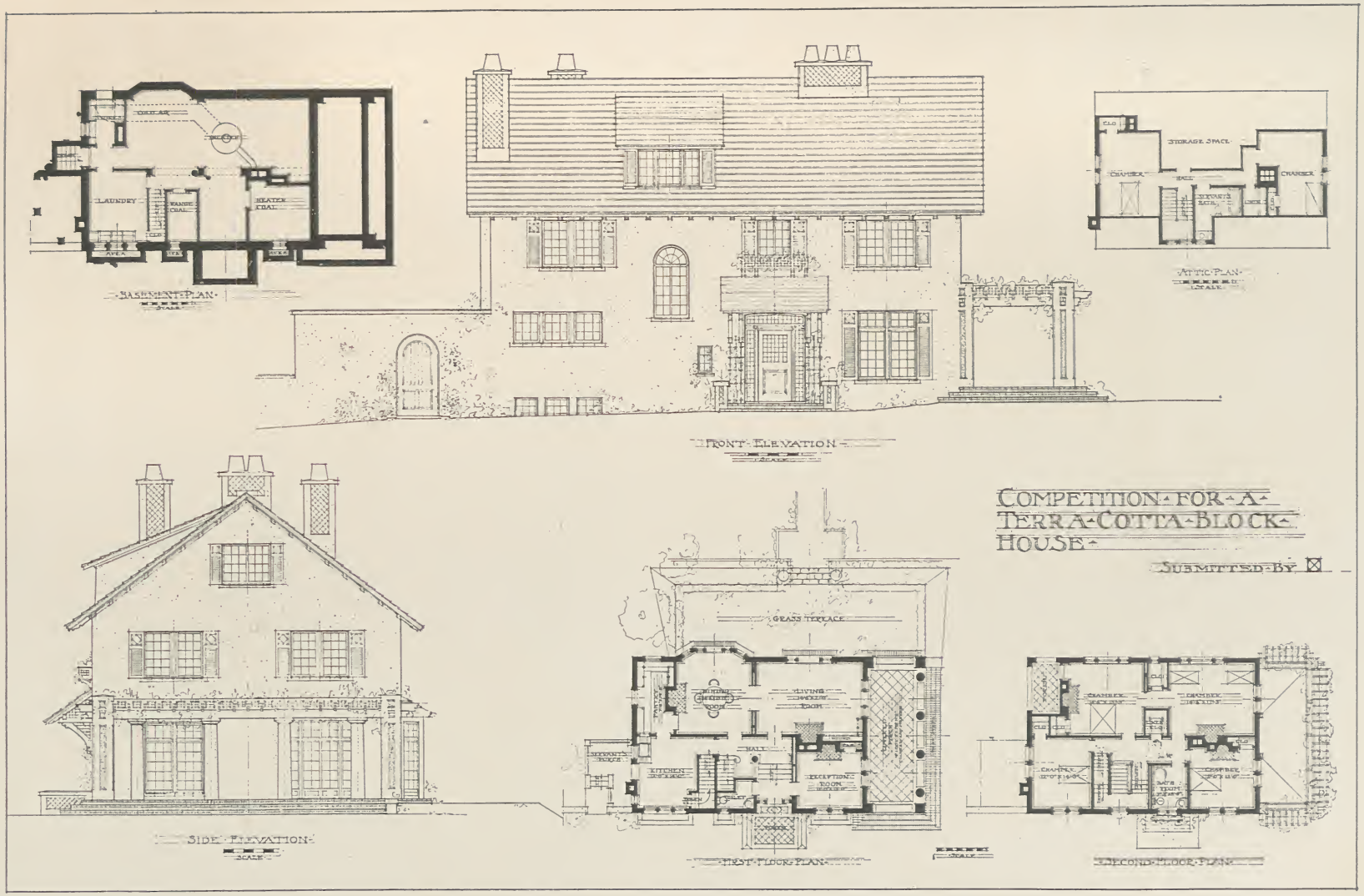
A plaster finished house with its soft appealing tones when framed with the greens of the lawn, the shrubbery, and the trees, is indeed a picture which appeals to those who acknowledge a glory in the word home. We like to think of the home as a permanent institution and to feel that age gives to it but an additional charm; that it will stand for generations as a shelter for those who shall come after us, bespeaking at all times the history of those who have gone before. This can be so only as we choose our materials from which the house is to be built. Shall it be of the sort which is known to decay — to disintegrate? Or shall it be of the sort which is as everlasting as the hills? It is no longer a question for doubt; the facts have been established. It is no longer a question of cost where everything is now in favor of the better material — the durable material. It is a question of intelligence.



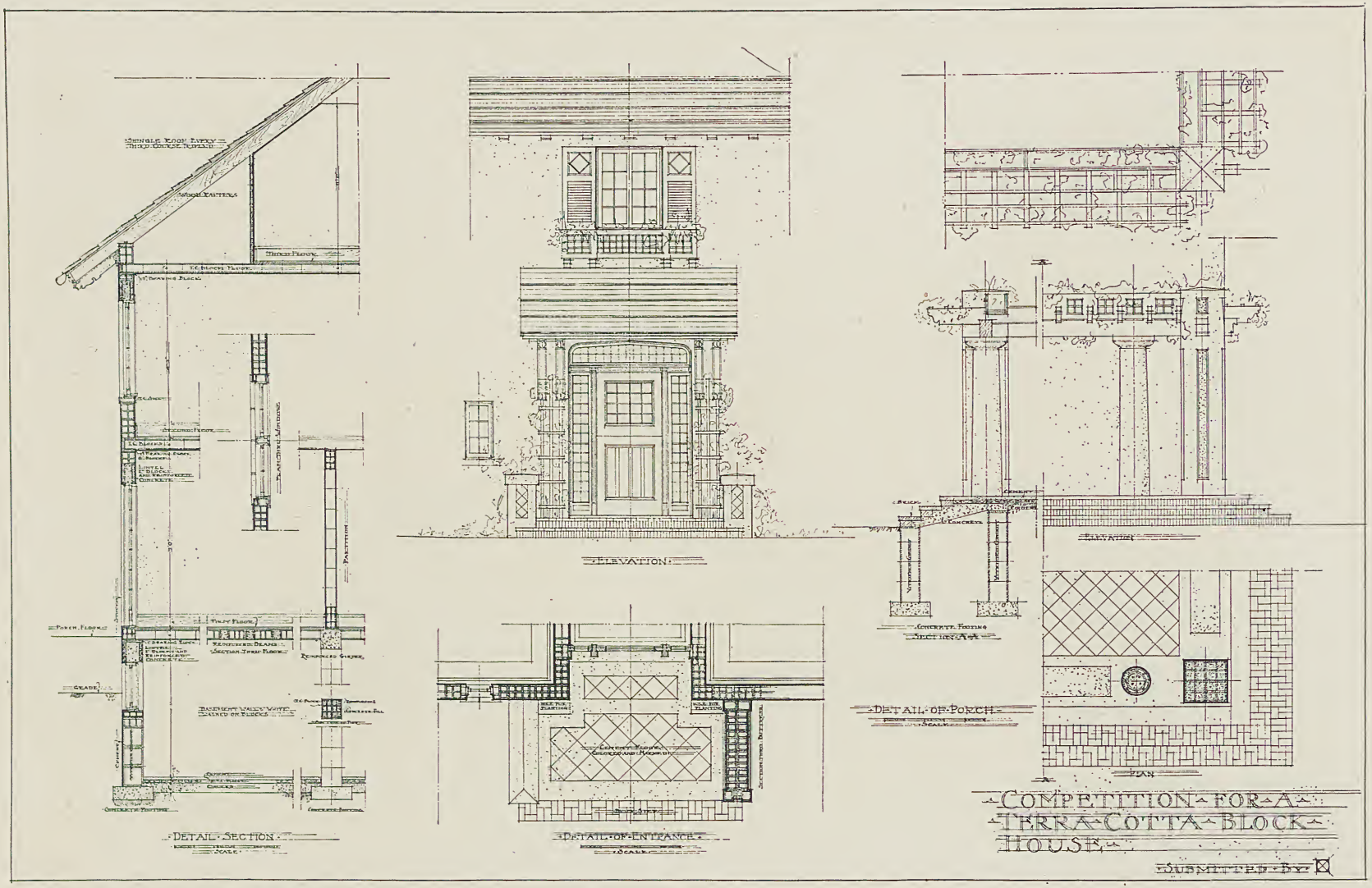
FIRST PRIZE DESIGN
SUBMITTED BY A. H. HEPBURN
40 Fairfield Street, Boston, Mass.



DETAILS OF DESIGN SUBMITTED BY A. H. HEPBURN
40 Fairfield Street, Boston, Mass.



SECOND PRIZE DESIGN
SUBMITTED BY WILLIAM G. HOLFORD
302 Washington Avenue, Brooklyn, N. Y.



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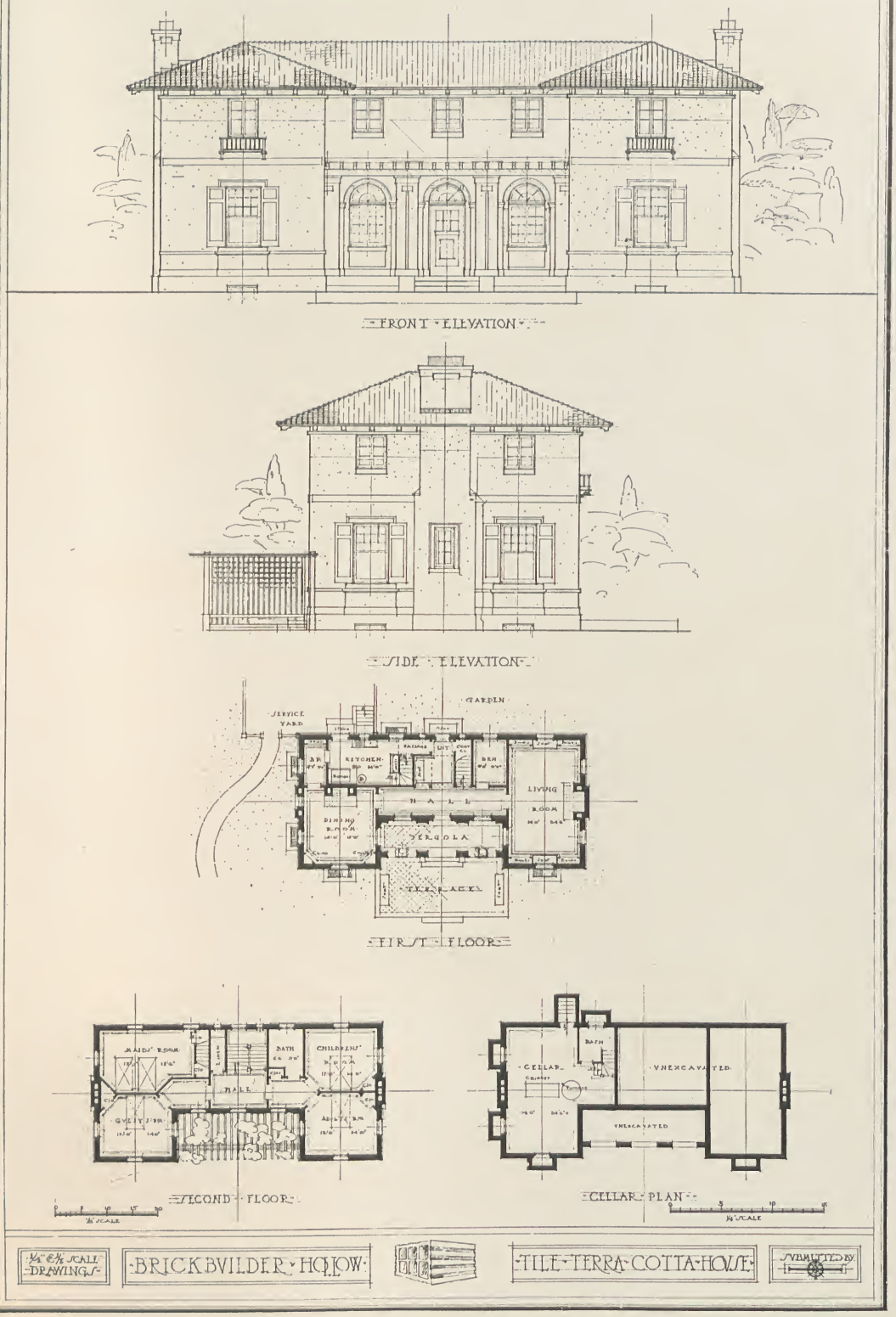
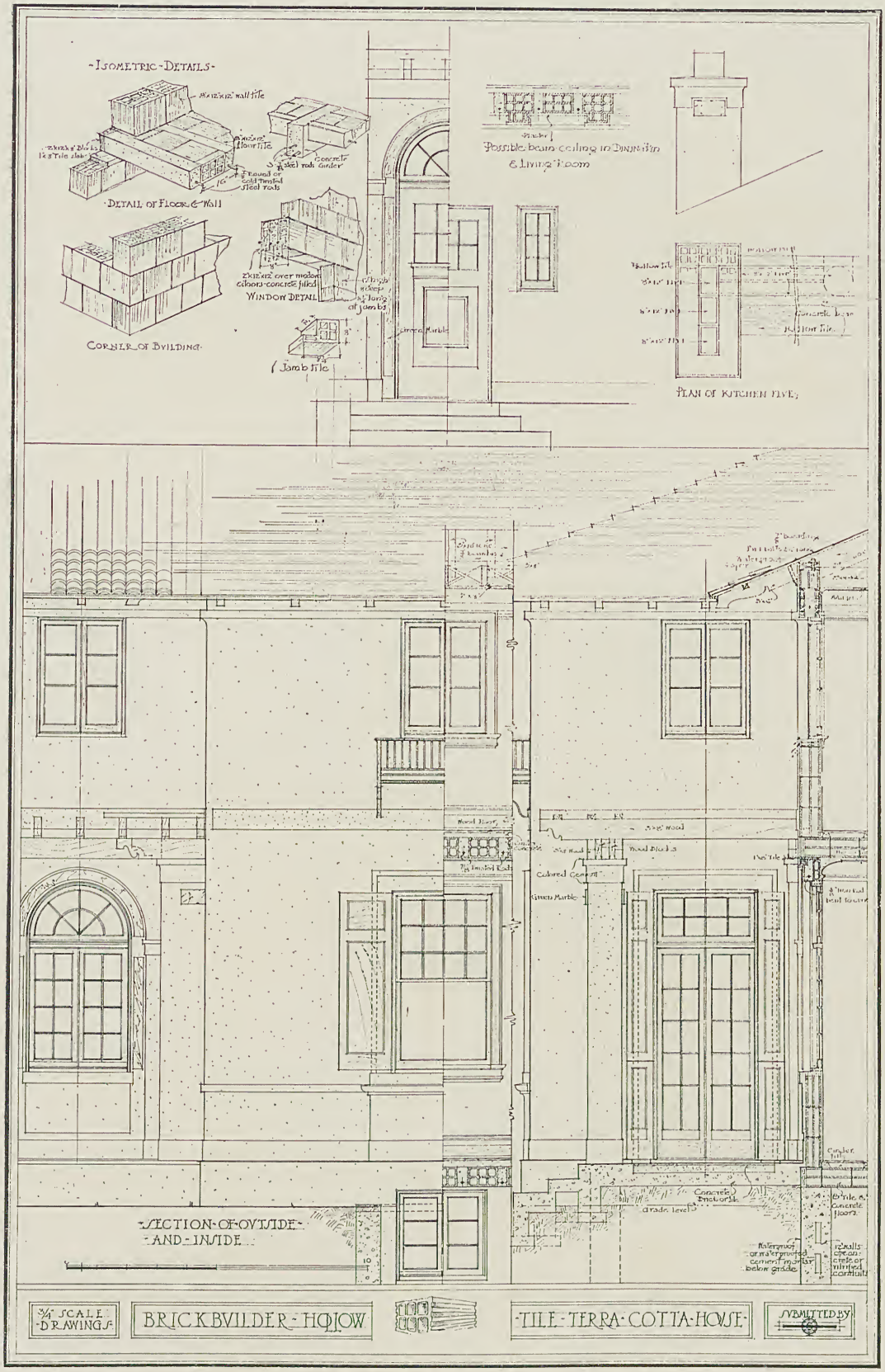
302 Washington Avenue, Brooklyn, N. Y.



THIRD PRIZE DESIGN
SUBMITTED BY FREDERICK JOSHUA MESEKE AND ALFRED G. WHELLER
20 West 109th Street, New York City



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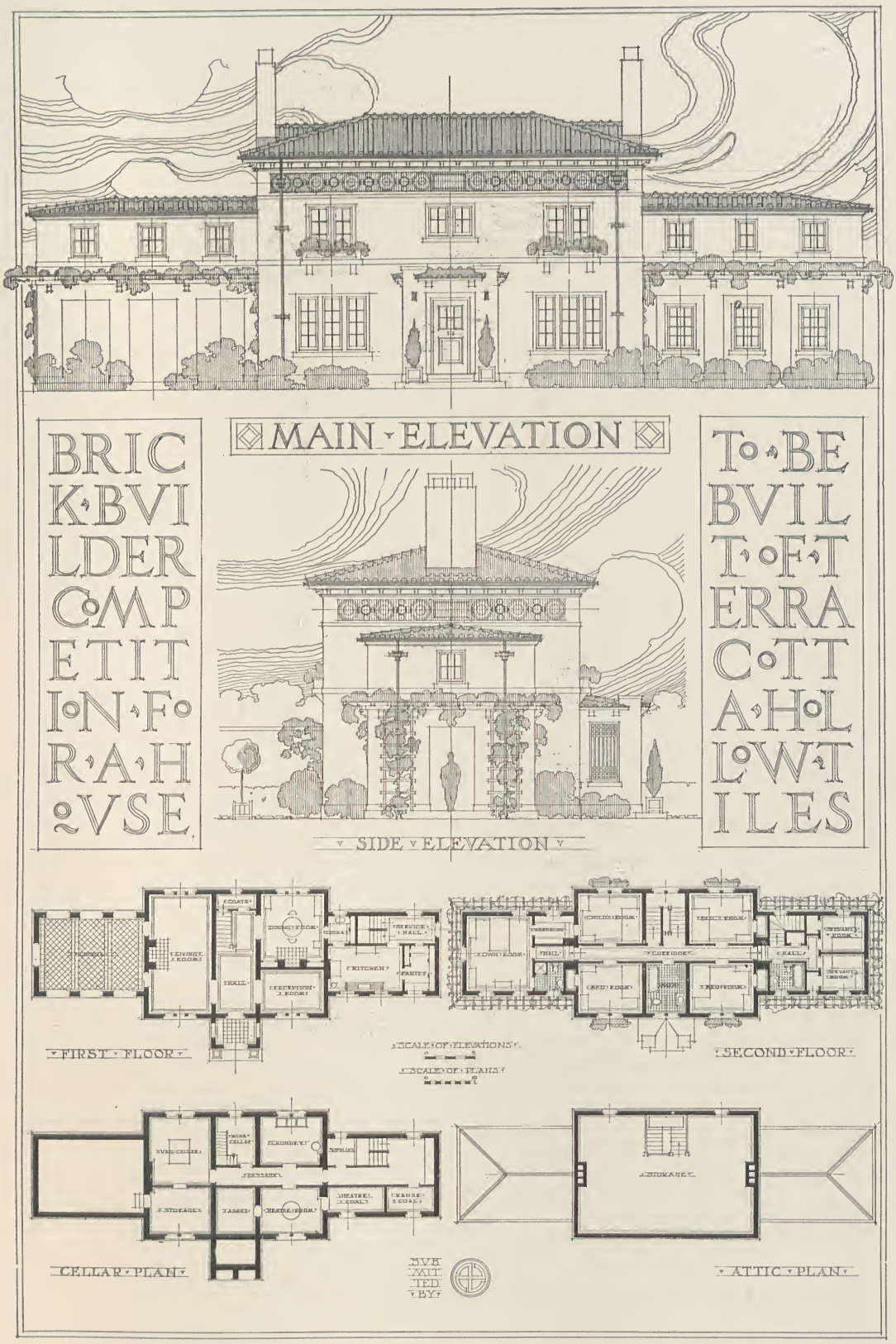
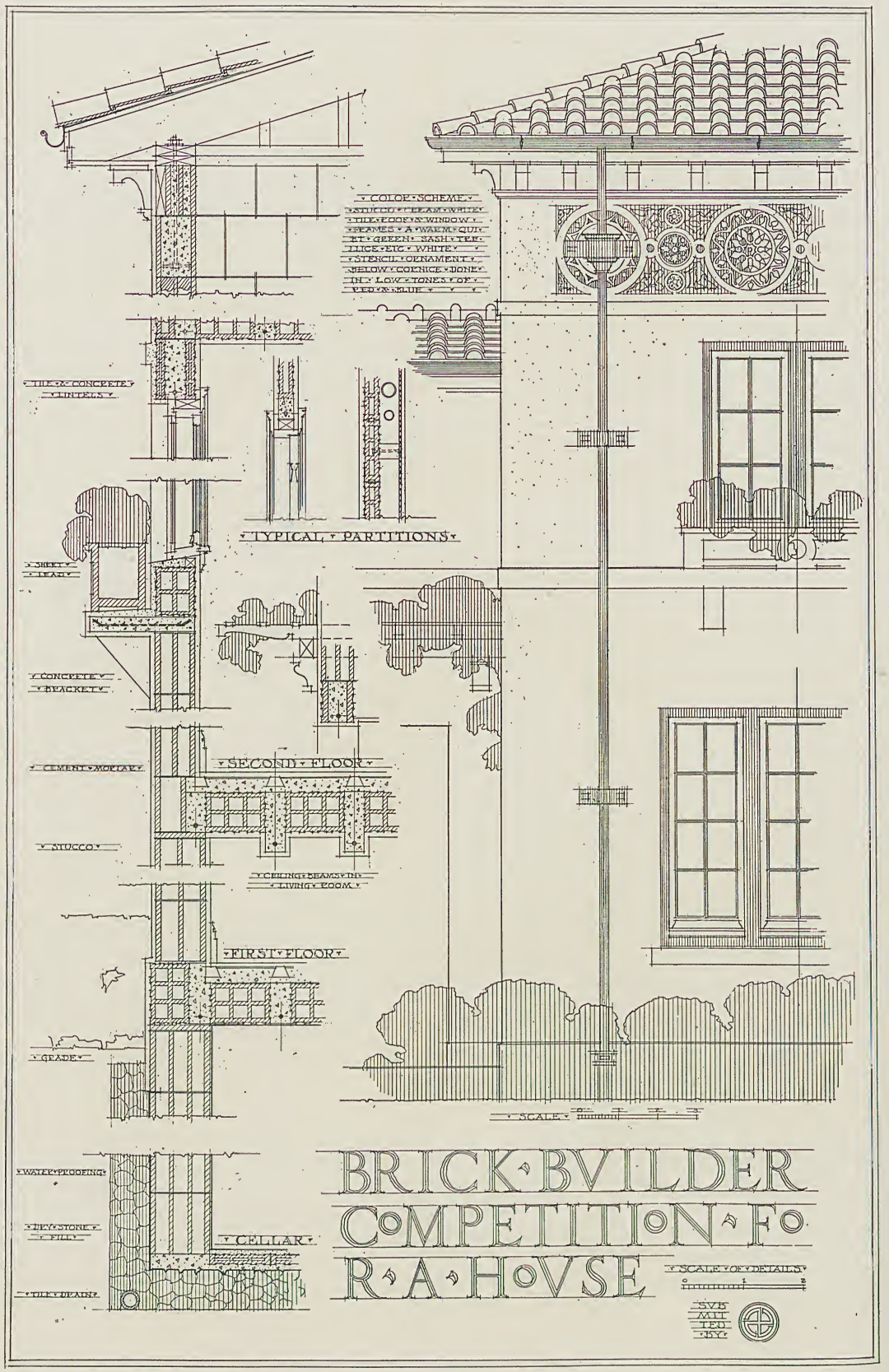
20 West 109th Street, New York City



MENTION DESIGN
SUBMITTED BY J. MARTIN BROWN
109 West 54th Street, New York City



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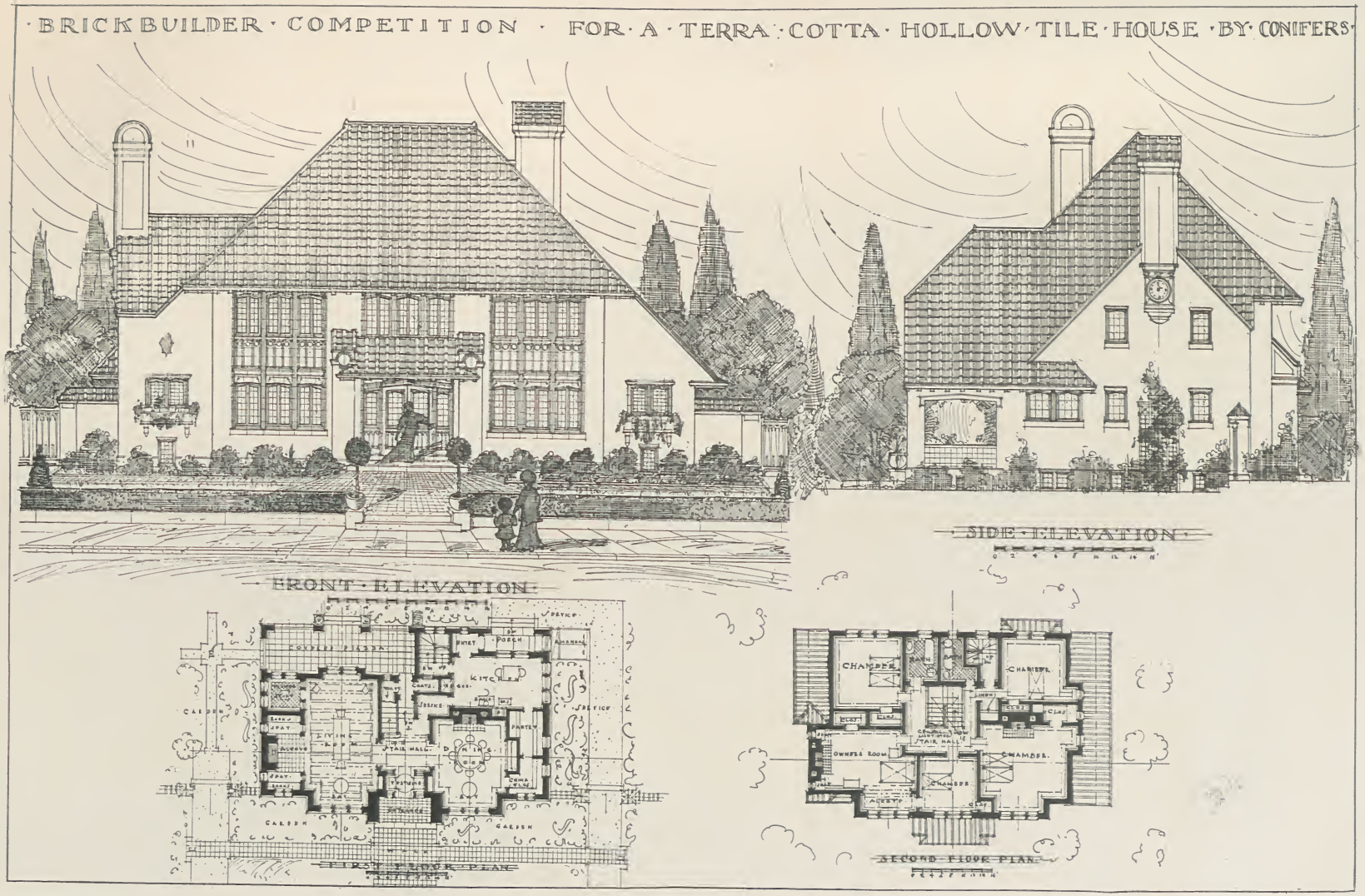
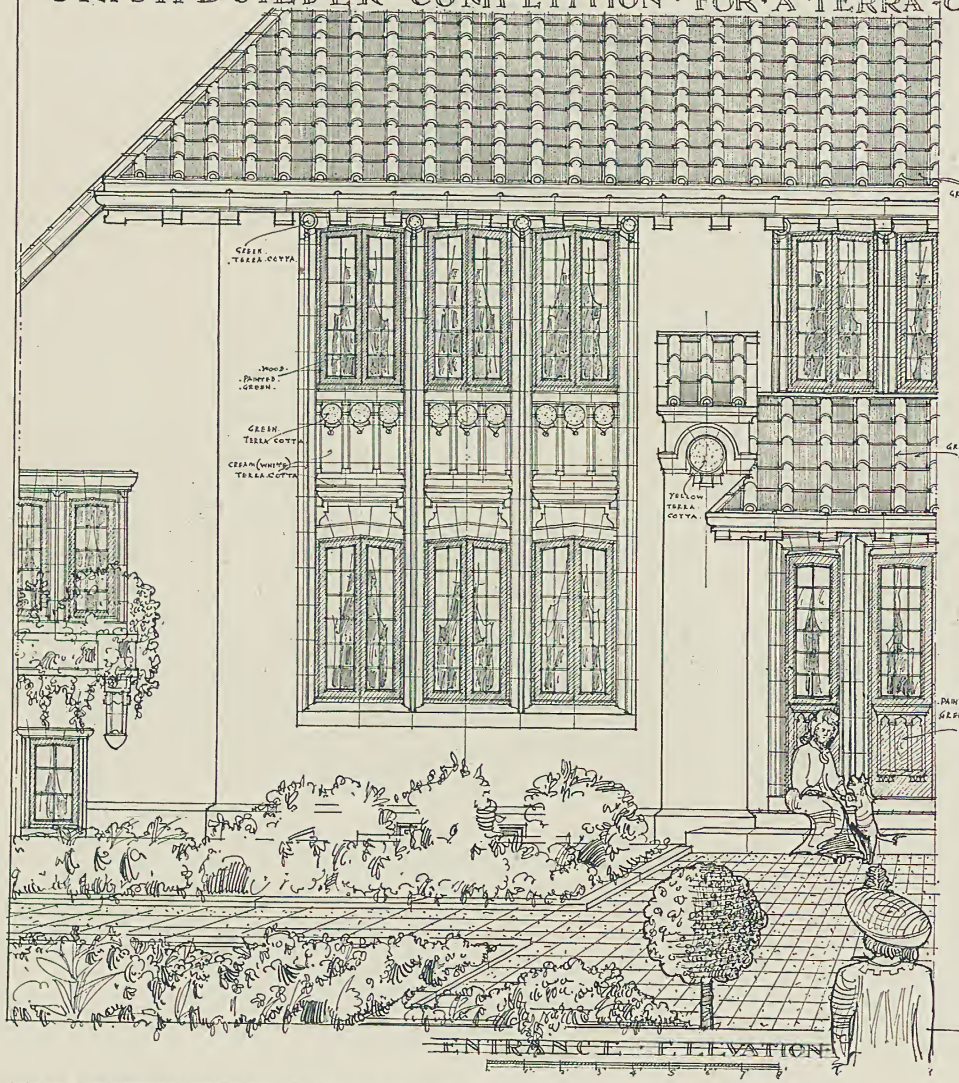
109 West 54th Street, New York City

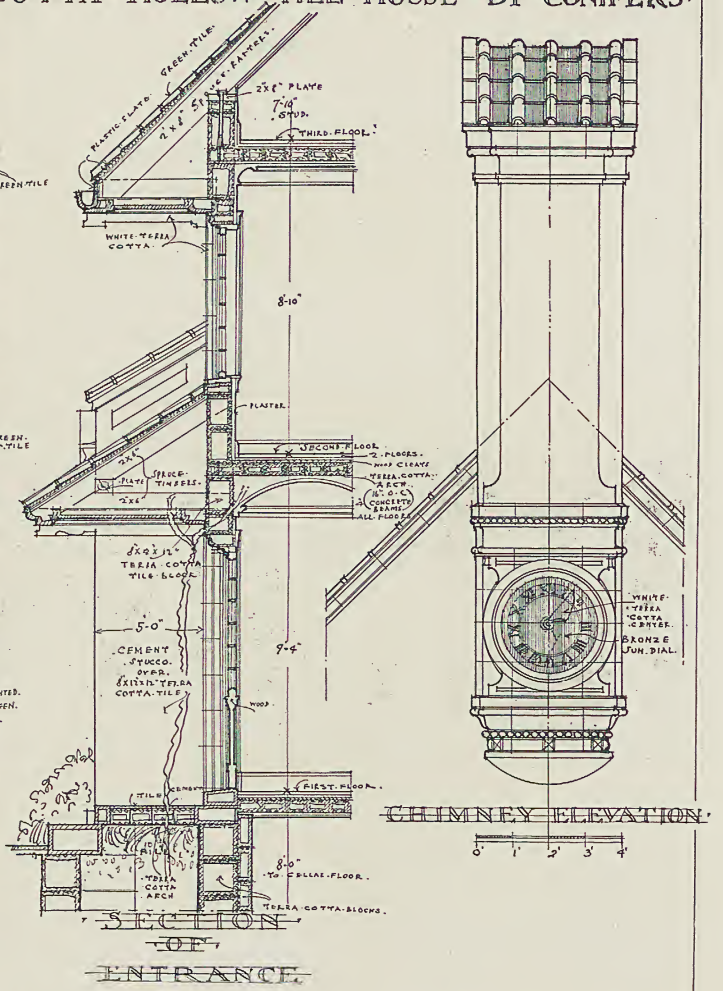


MENTION DESIGN
SUBMITTED BY HOMER KIESSLING
8 Beacon Street, Boston, Mass.

BRICK BUILDER · COMPETITION · FOR · A TERRA · COTTA · HOLLOW · TILE HOUSE · BY · CONIFERS ·



ENTRANCE · ELEVATION



SECTION OF ENTRANCE

CHIMNEY ELEVATION

0 1 2 3 4

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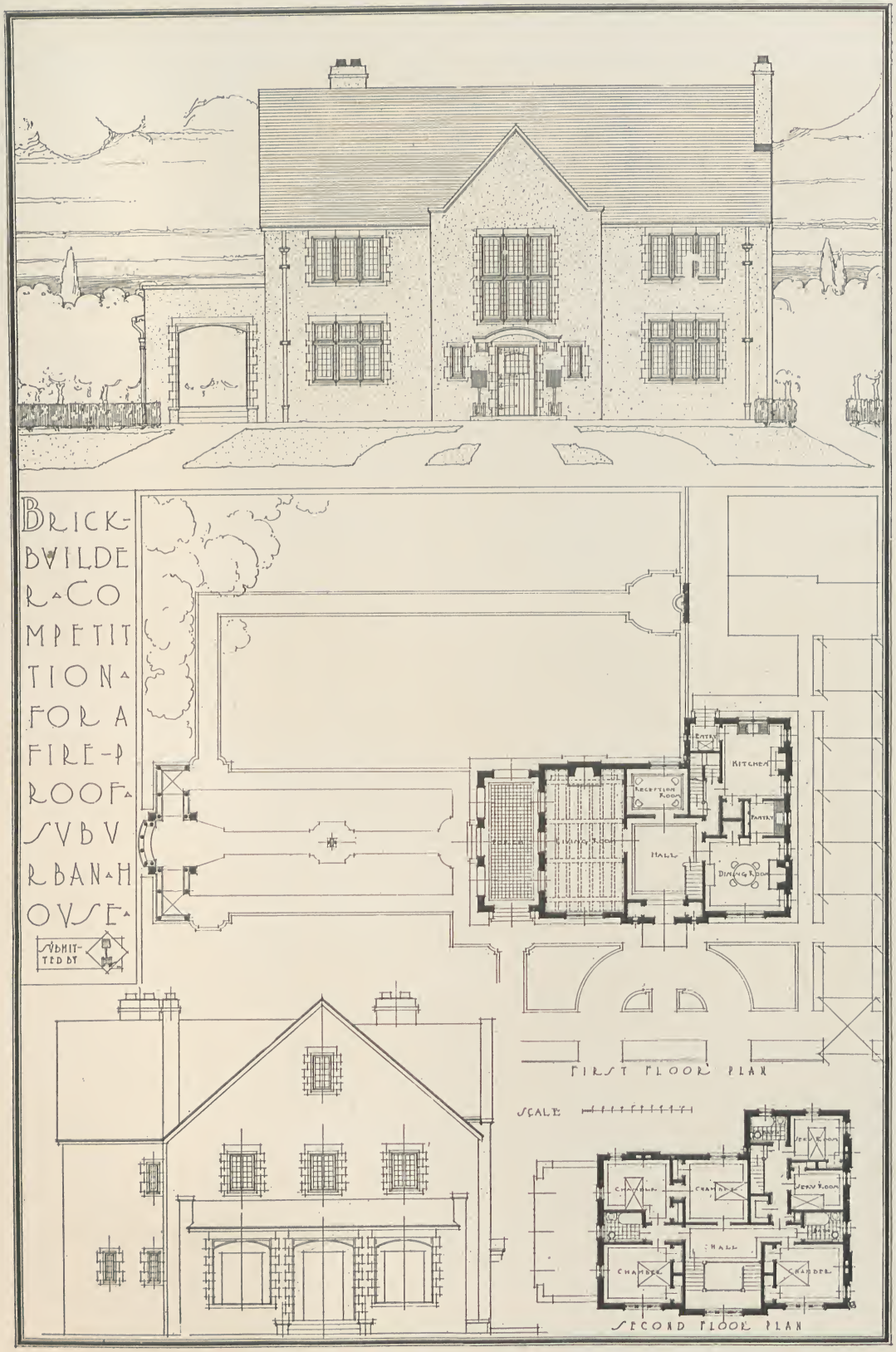
8 Beacon Street, Boston, Mass.



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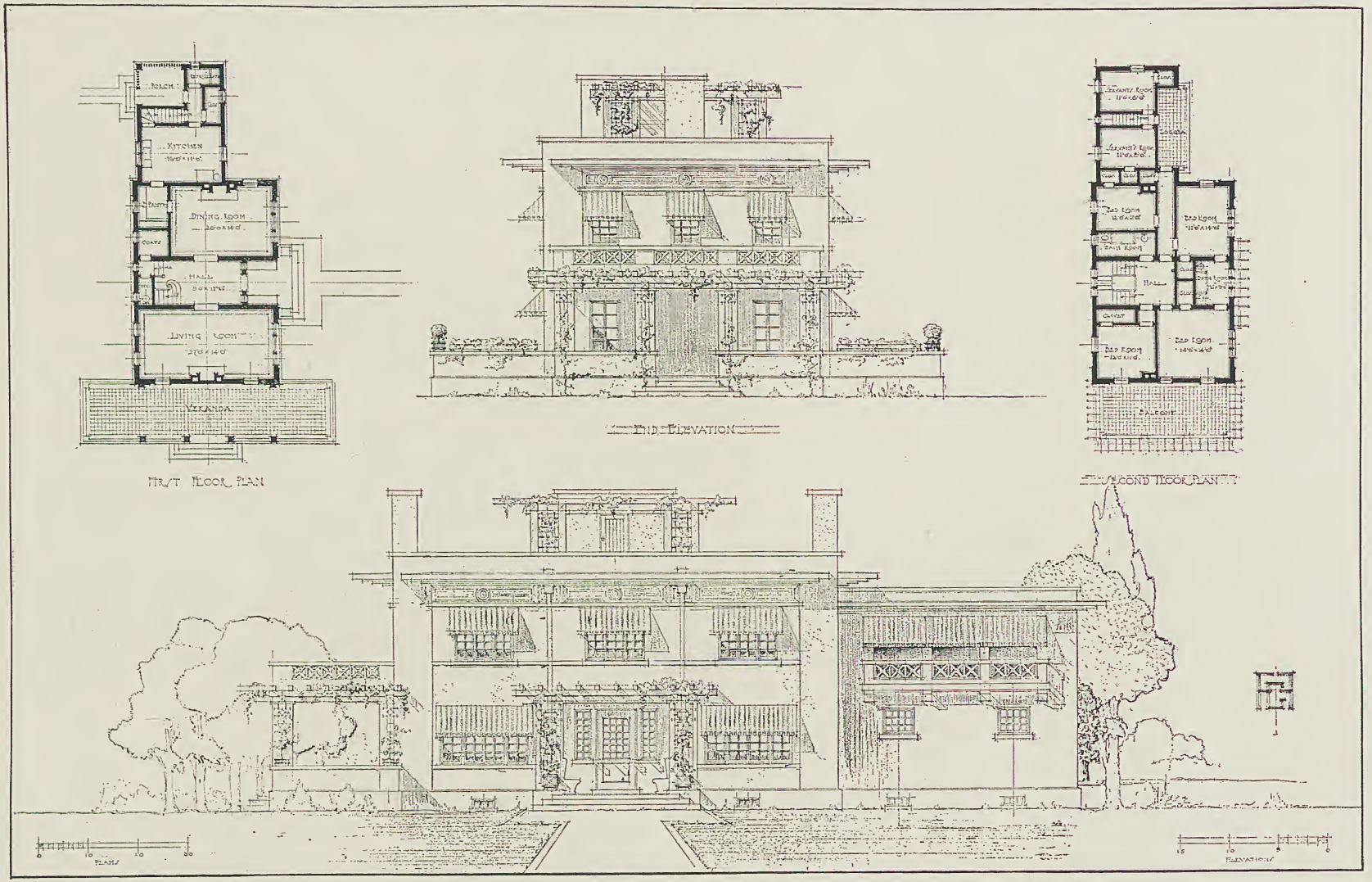
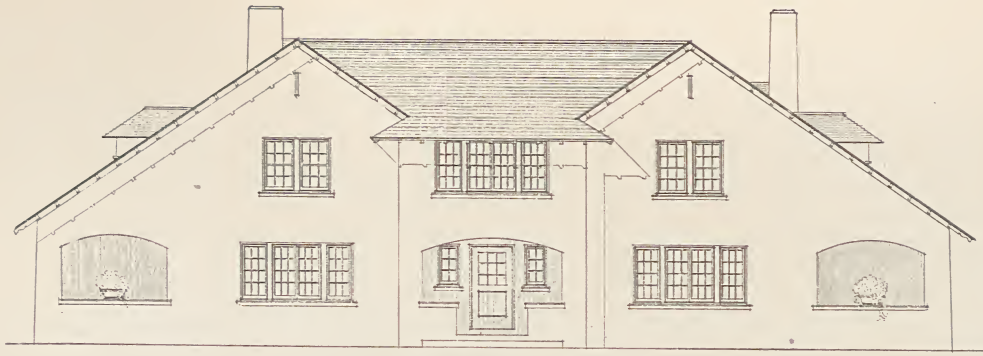
SUBMITTED BY R. E. MONSON & C. R. NEWKIRK
19 West 38th Street, New York City



MENTION DESIGN
SUBMITTED BY FREDERICK G. FROST
527 Fifth Avenue, New York City



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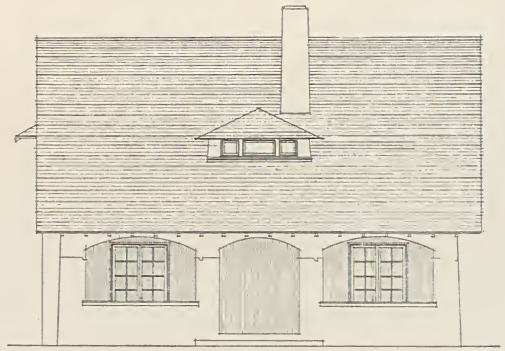
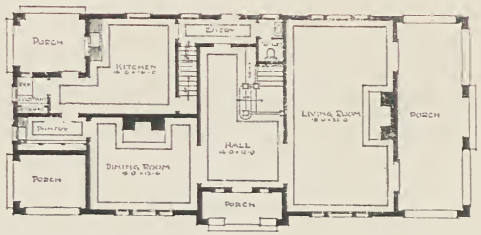
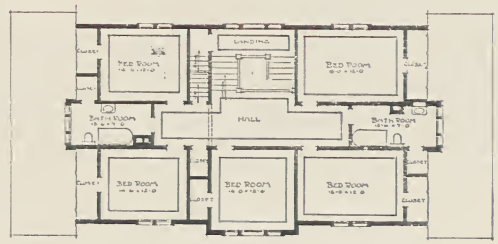


SIDE ELEVATION



FIRST FLOOR PLAN



SECOND FLOOR PLAN

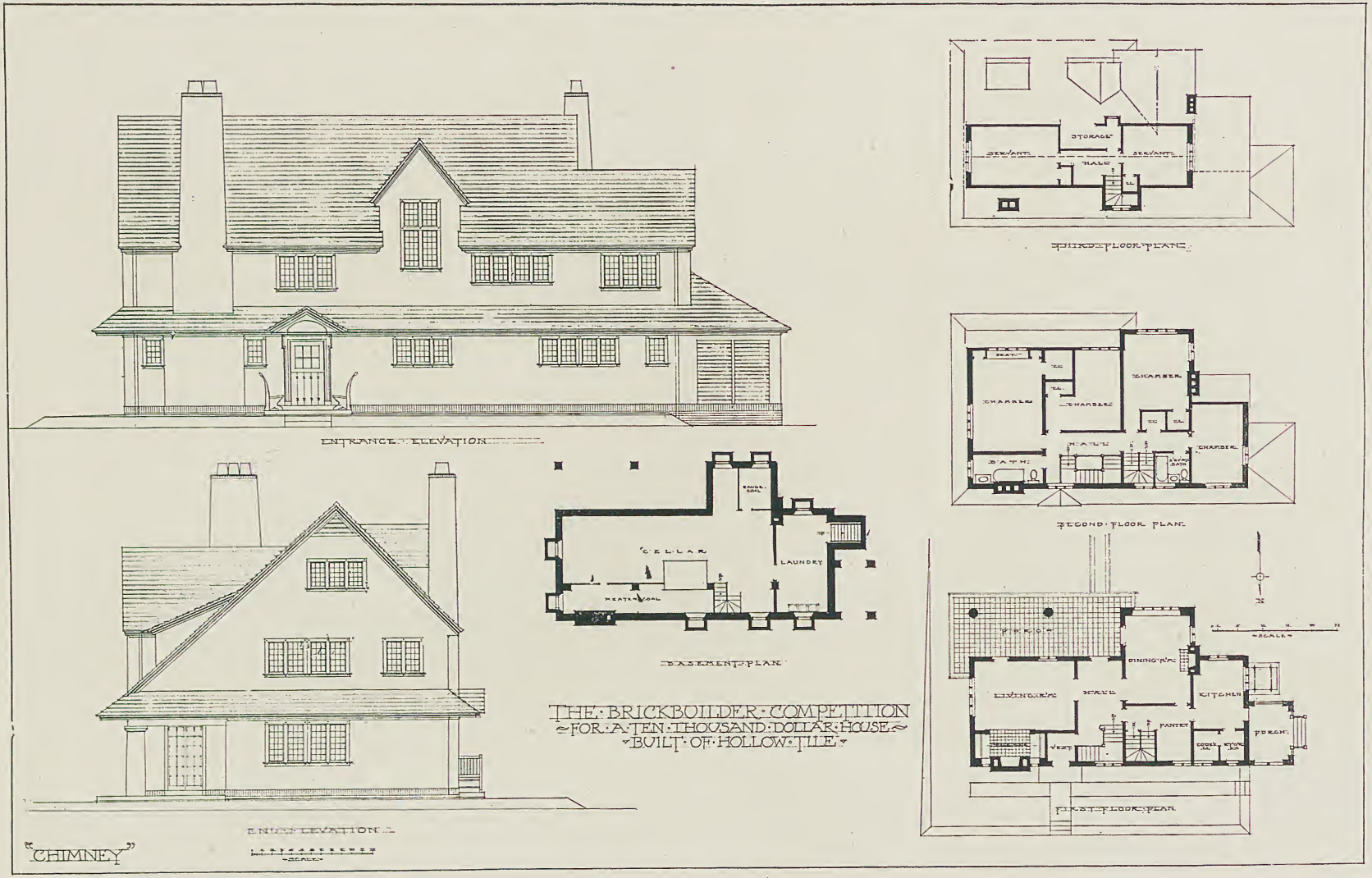
BRICKBUILDER COMPETITION

SCALE FOR PLANS

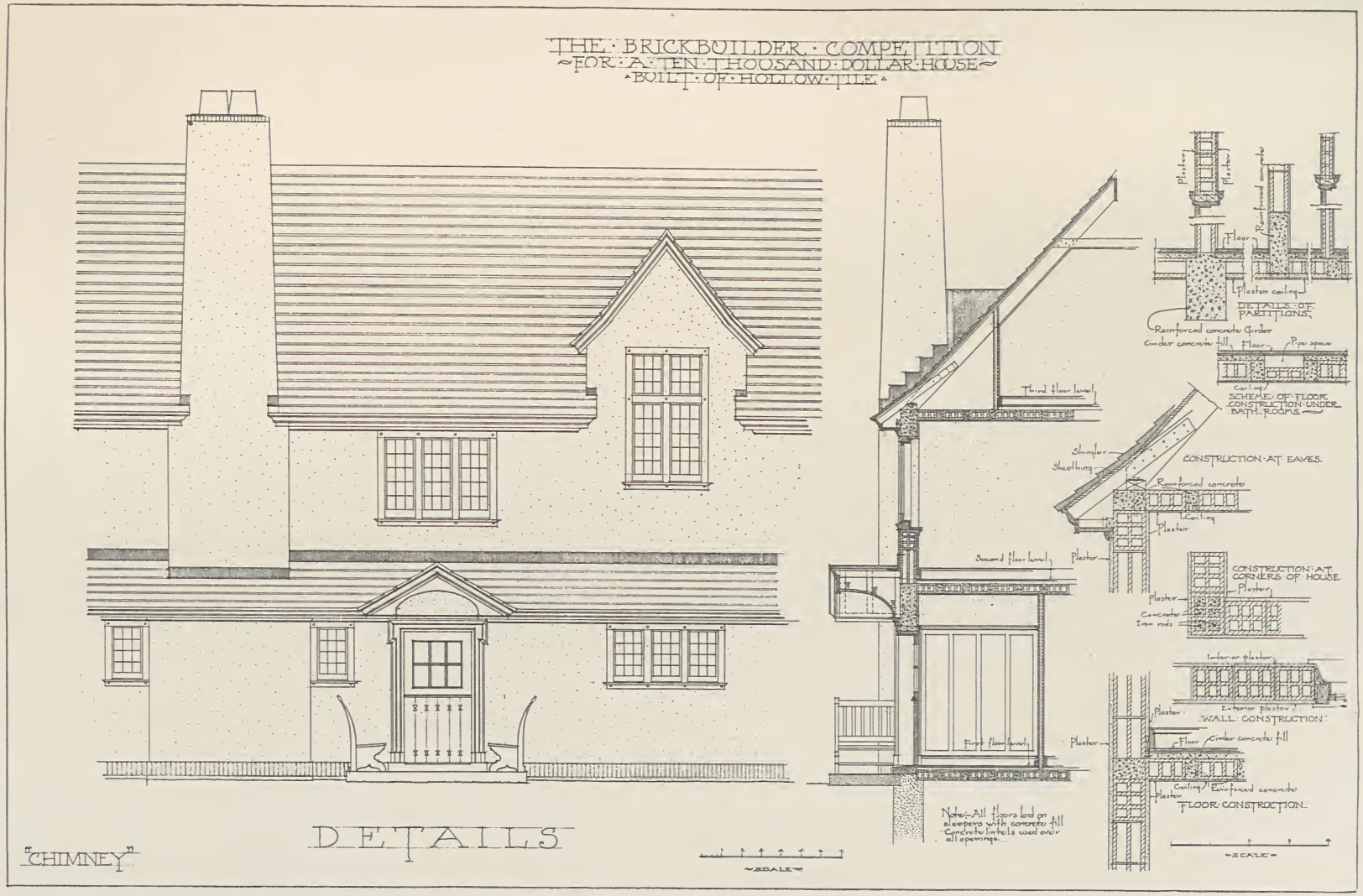
DRAWINGS SUBMITTED BY

SCALE FOR ELEVATIONS

MENTION DESIGN
SUBMITTED BY E. C. GUTZWILLER AND H. W. BRUNNO
705 Rentschler Building, Hamilton, O.

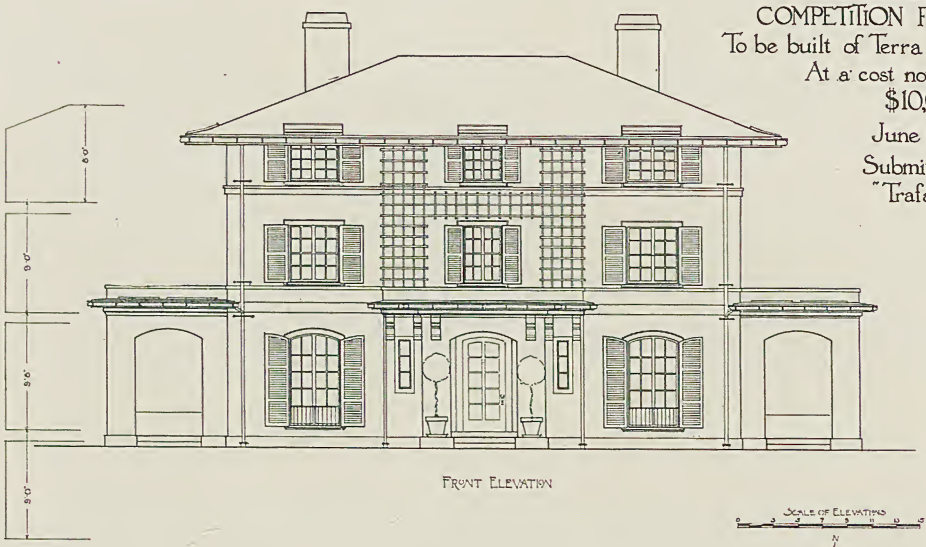


DESIGN SUBMITTED BY ROBT. A. TAYLOR
538 Elm Street, Camden, N. J.



DETAILS OF DESIGN SUBMITTED BY ROBT. A. TAYLOR
538 Elm Street, Camden, N. J.

THE BRICKBVILDER
COMPETITION FOR A HOVSE
To be built of Terra Cotta Hollow Tiles
At a cost not exceeding
$10,000.
June 1, 1909.
Submitted by
"Trafalgar"



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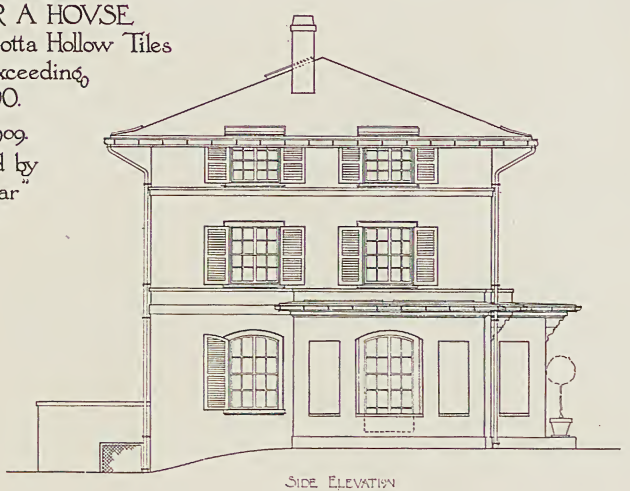
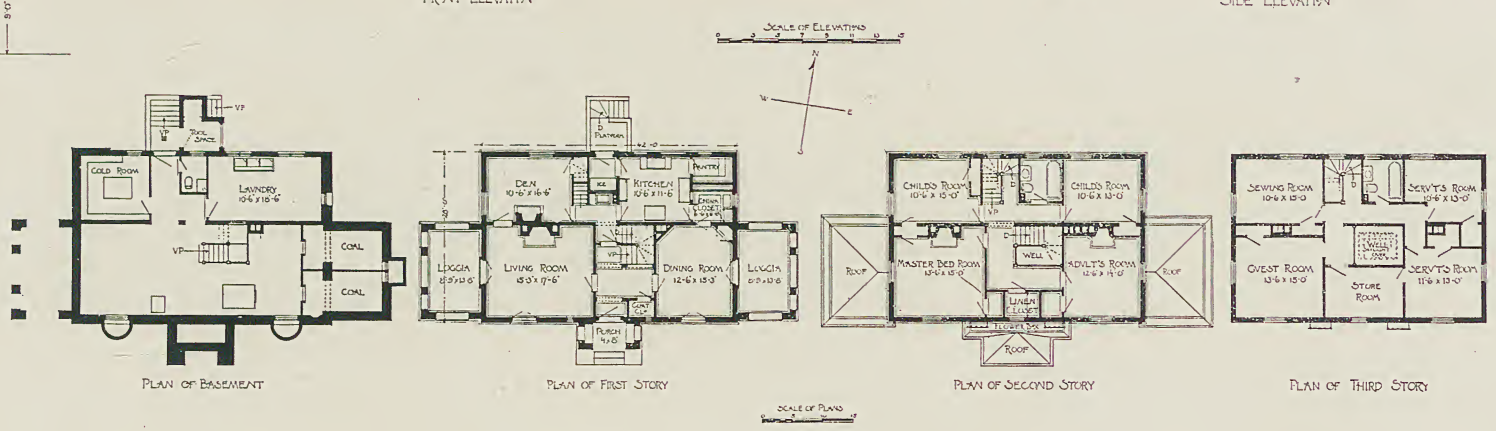


SIDE ELEVATION



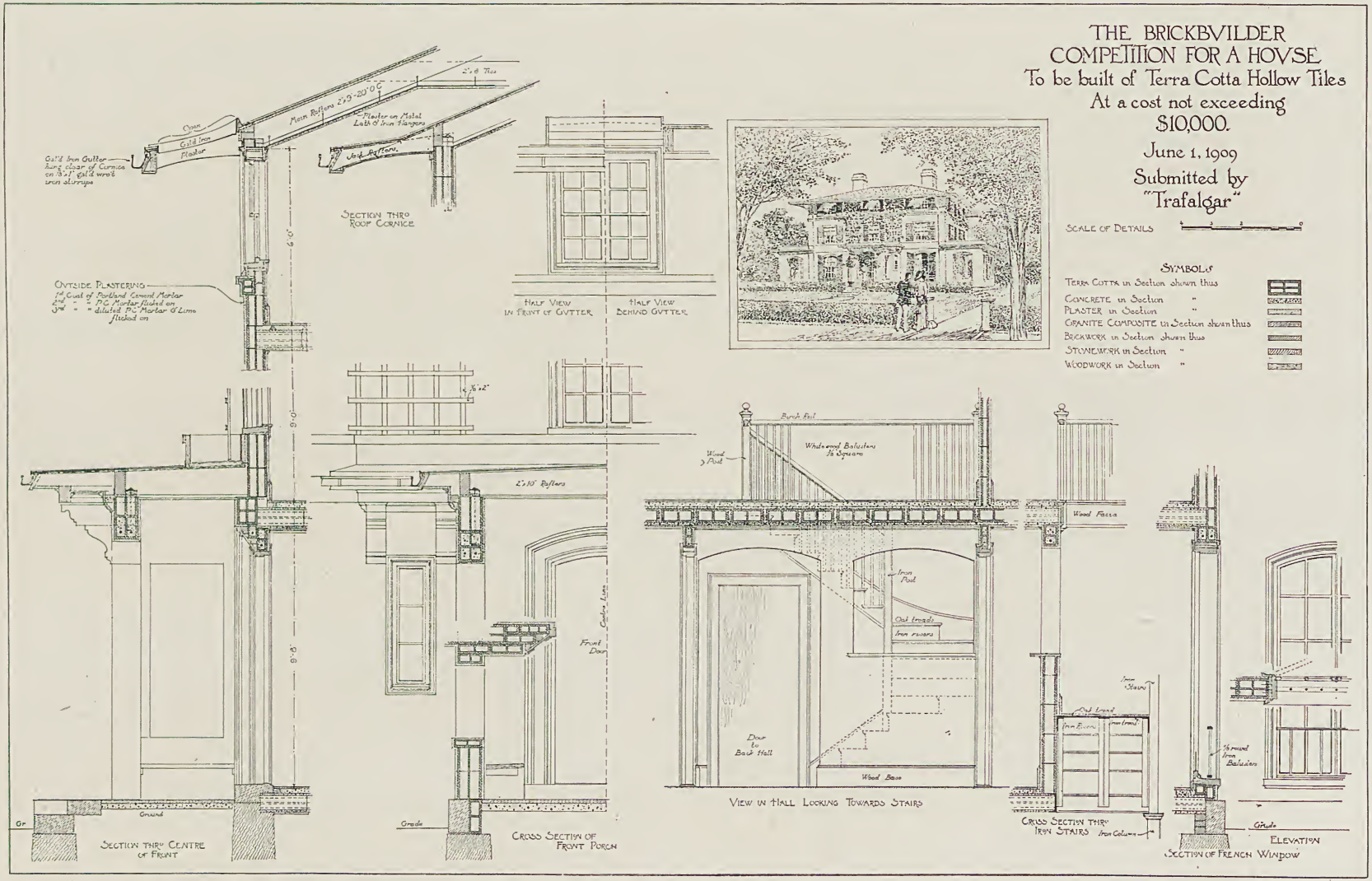
PLAN OF BASEMENT

PLAN OF FIRST STORY

PLAN OF SECOND STORY

PLAN OF THIRD STORY

DESIGN SUBMITTED BY WILLIAM D. AUSTIN
50 Bromfield Street, Boston, Mass.



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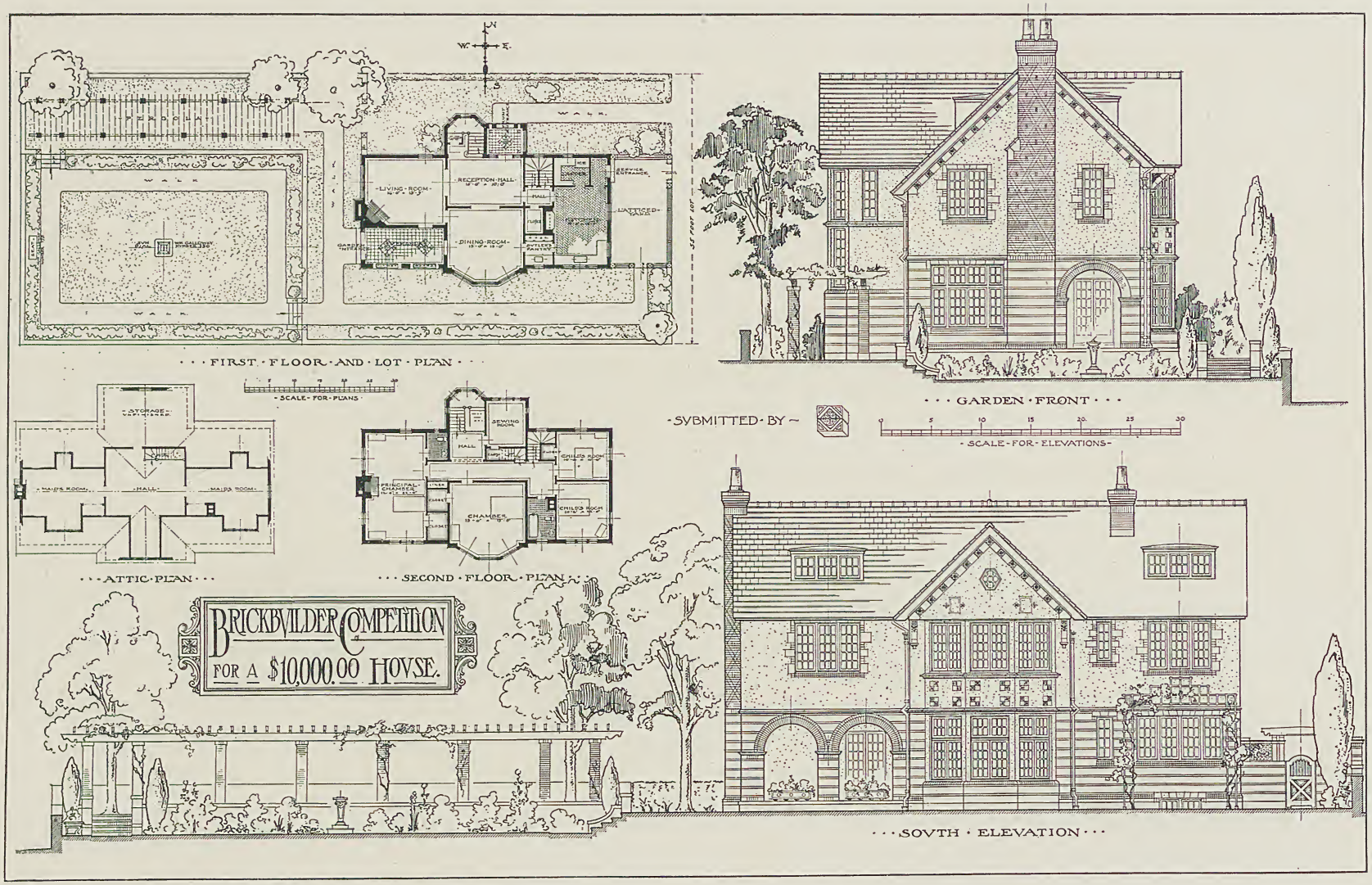
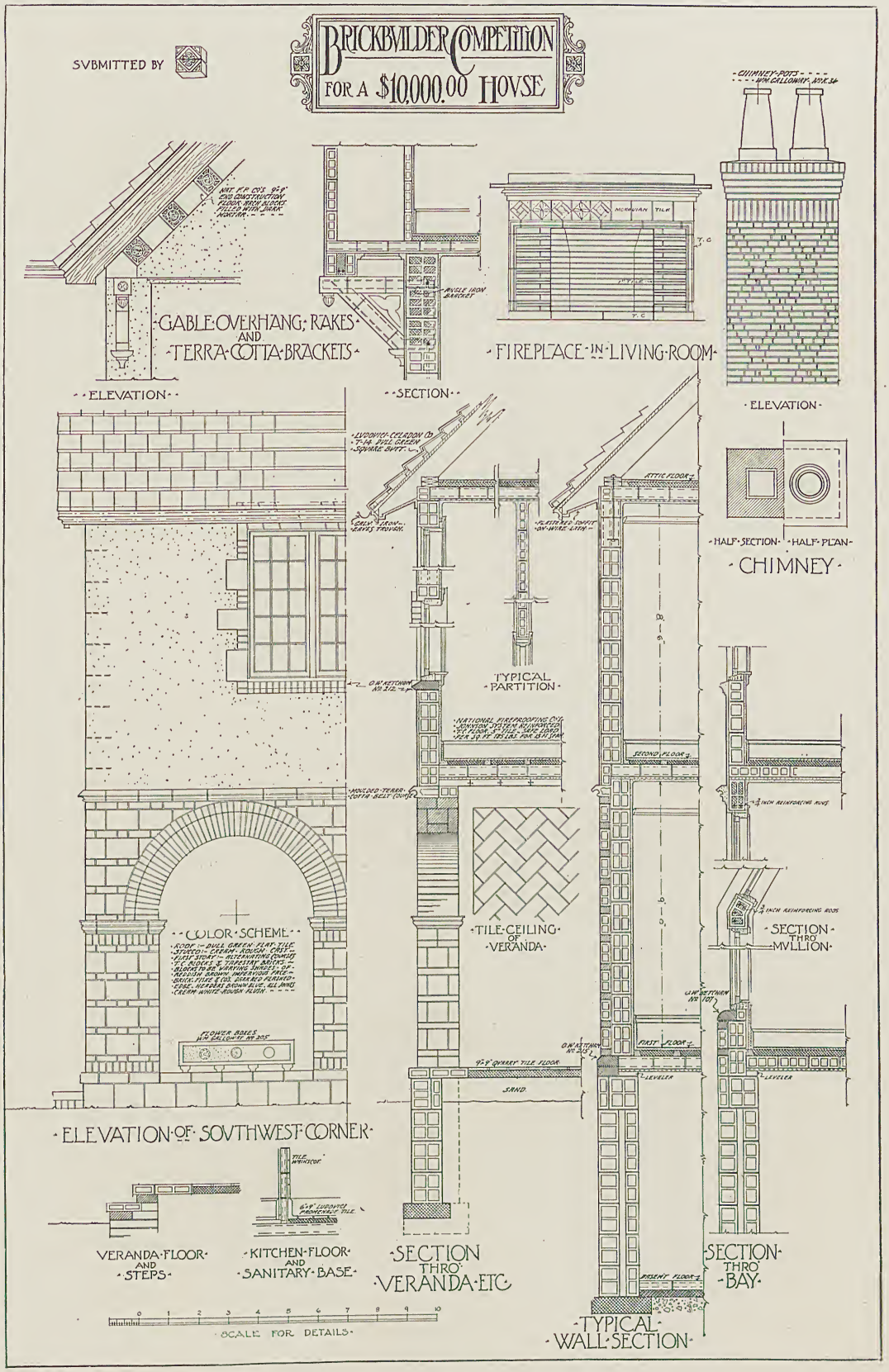


DESIGN SUBMITTED BY FRANK LeBARON AURELIO AND CHARLES FRANK GIFFORD
49 Pearl Street, Hartford, Conn.



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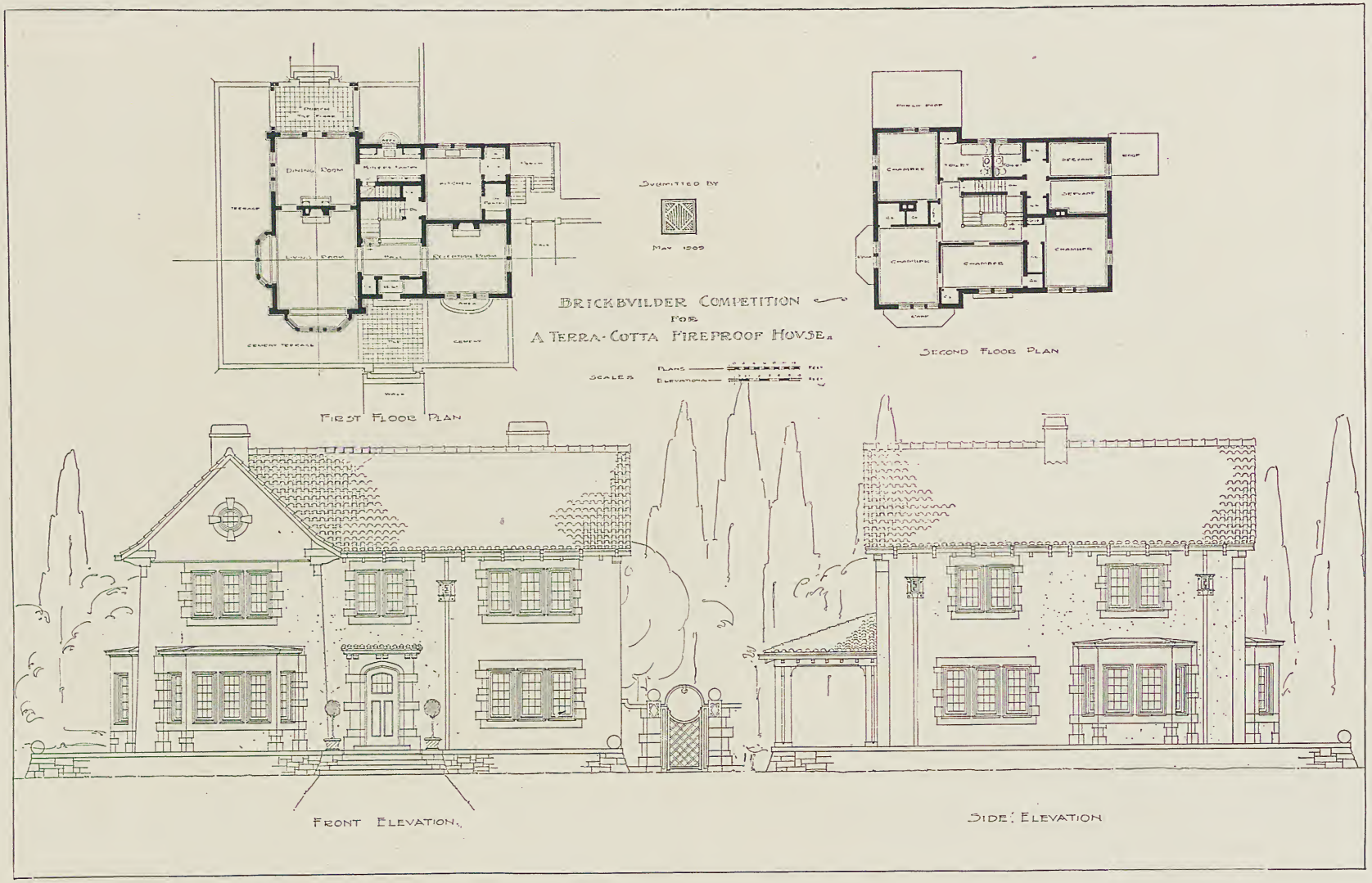
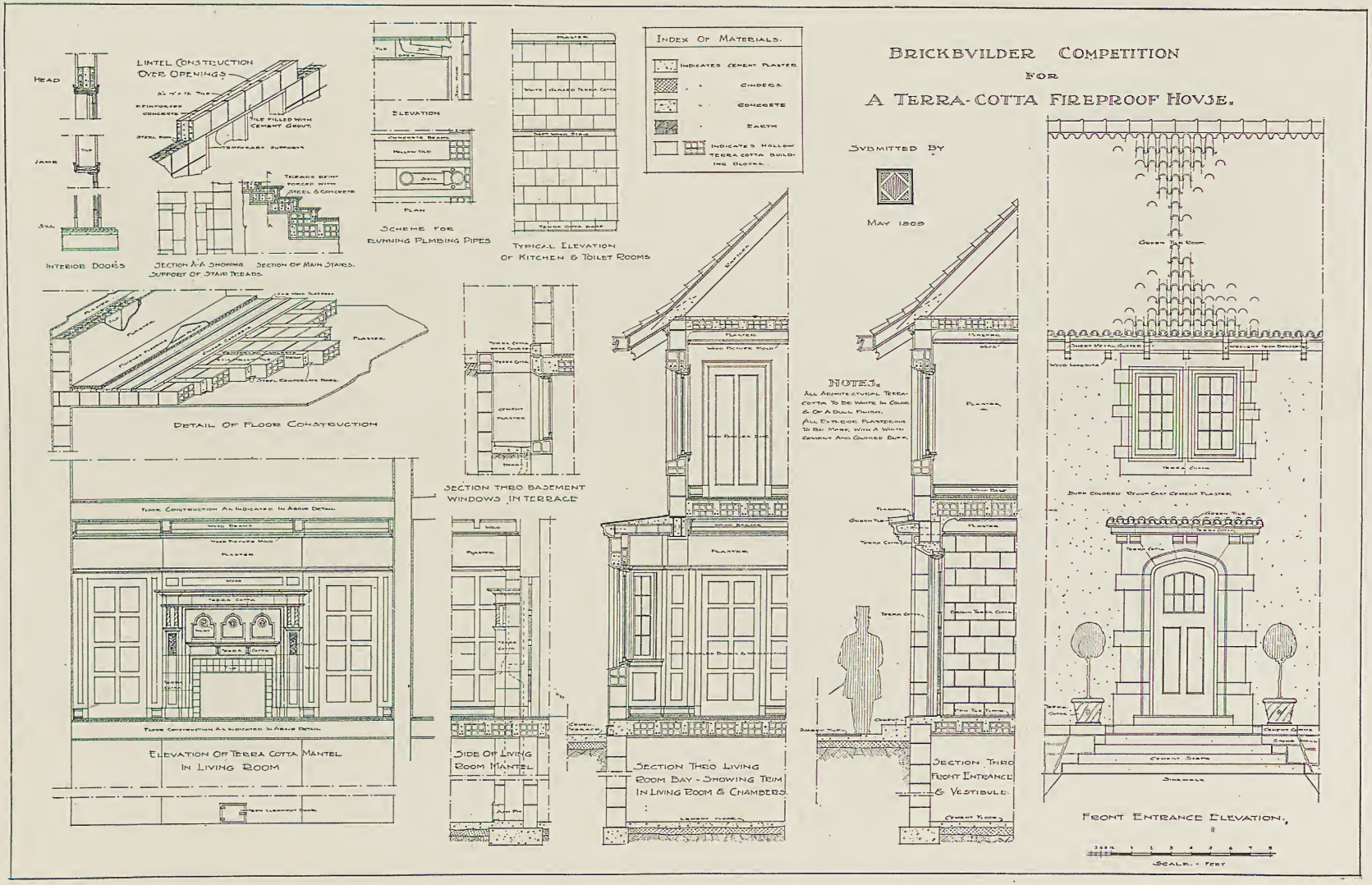


DESIGN SUBMITTED BY RAYMOND W. FLINN
1071 Lawrence Avenue, Chicago, Ill.



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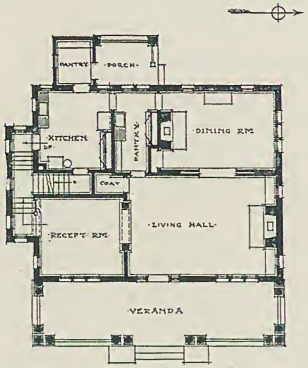
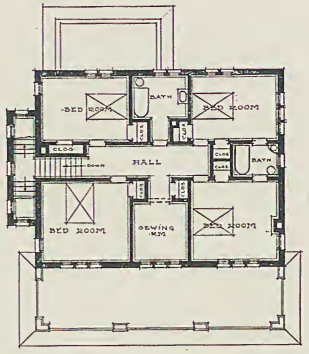


FIRST FLOOR PLAN

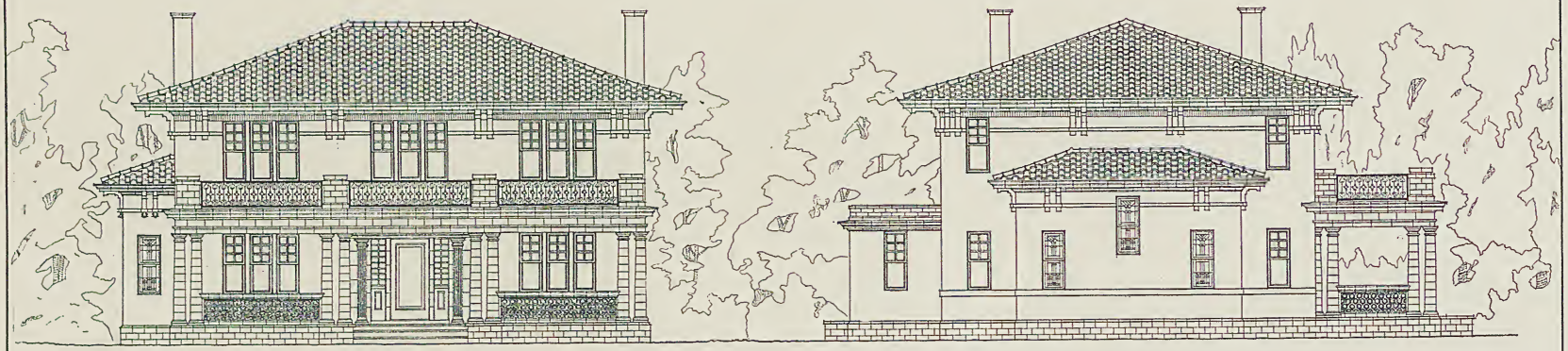
BRICK BVILDER COMPETITION
FOR A
TERRA COTTA HOVSE
SVBMITTED BY CADVCEVS

SCALE FOR PLANS

SCALE FOR ELEVATIONS



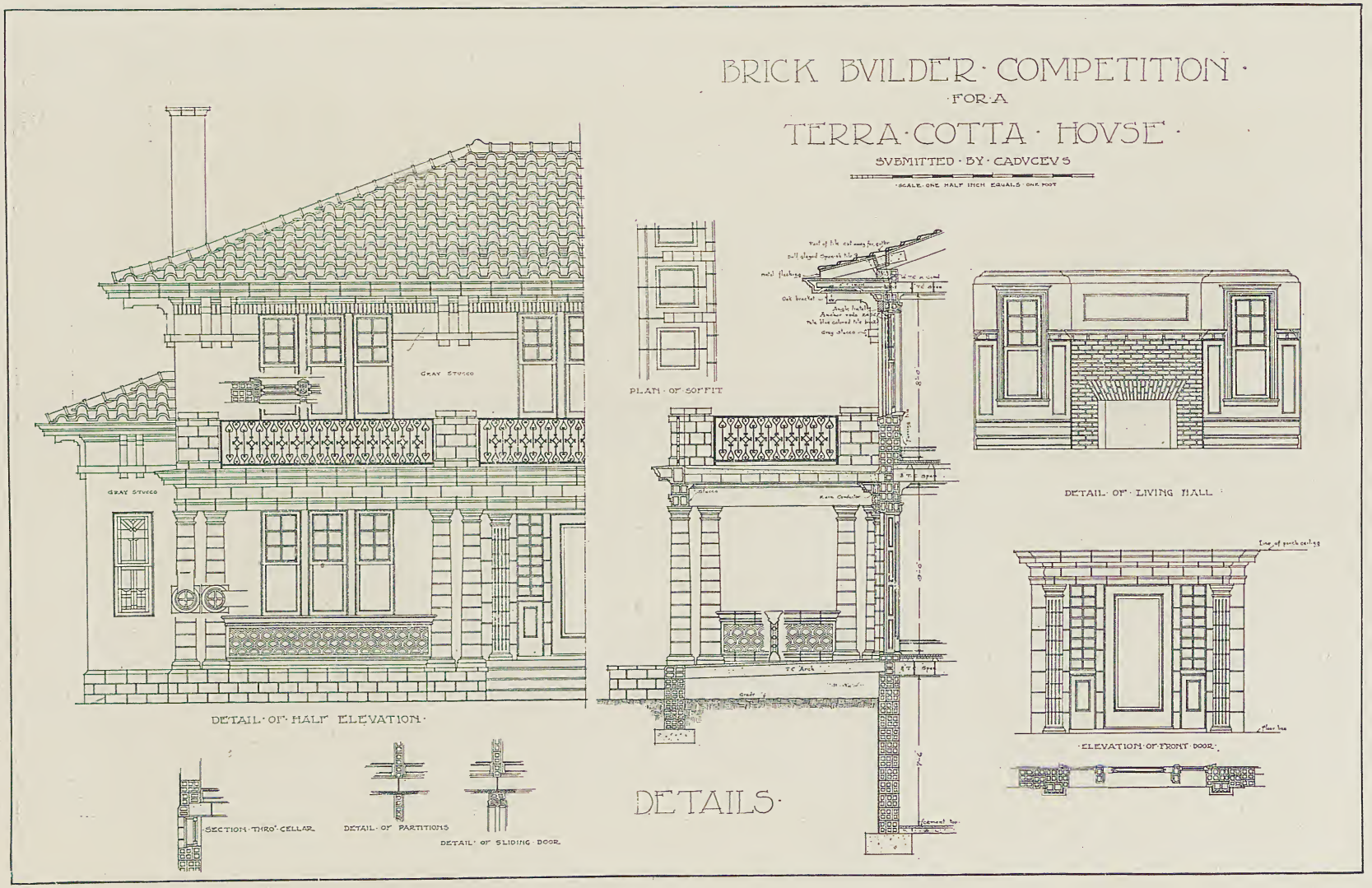
SECOND FLOOR PLAN



EAST ELEVATION

NORTH ELEVATION

DESIGN SUBMITTED BY WILLIAM S. SHULL, Jr.
1900 Pacific Avenue, Atlantic City, N. J.



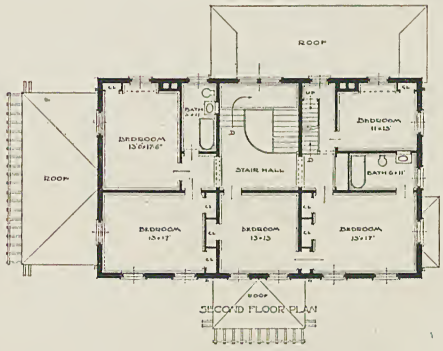
DETAILS OF DESIGN SUBMITTED BY WILLIAM S. SHULL, Jr.
1900 Pacific Avenue, Atlantic City, N. J.

COMPETITION FOR A HOUSE

TERRA COTTA HOLLOW TILES FIREPROOF

SIDE ELEVATION

FRONT ELEVATION



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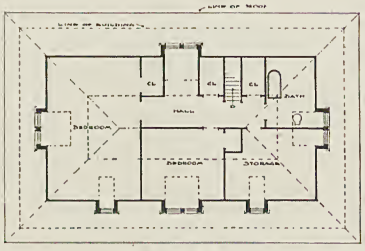

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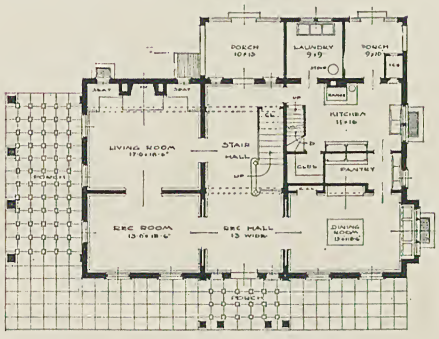

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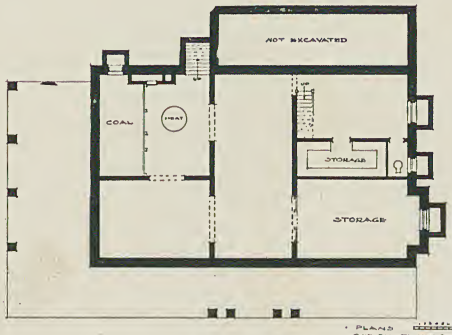
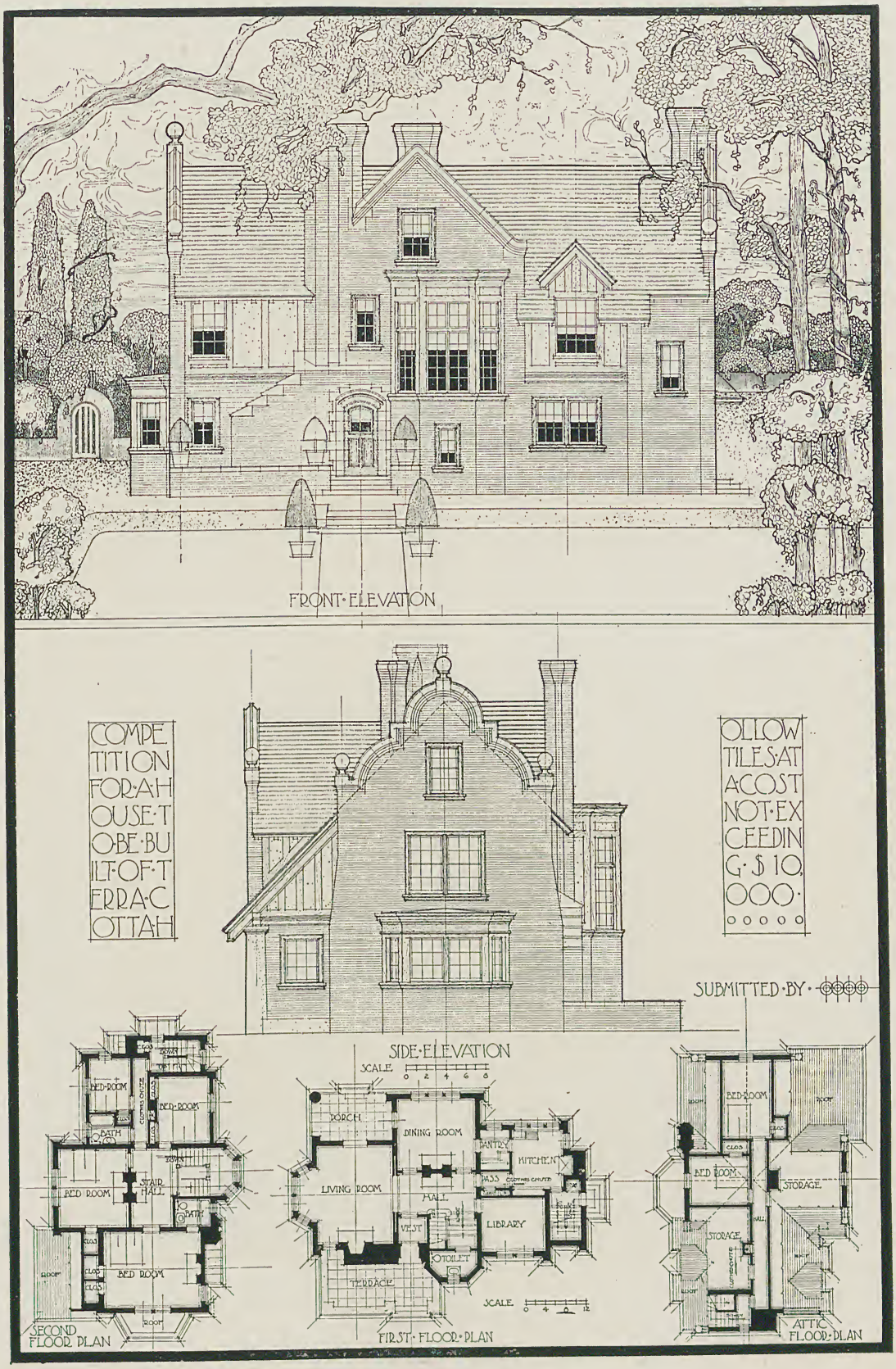


BASEMENT PLAN

PLANS ONE EIGHTH INCH ONE FT
ELEVATIONS ONE QUARTER INCH ONE FT
SUBMITTED BY CLA

DESIGN SUBMITTED BY HENRY B. WARD
1626 Chestnut Street, Philadelphia, Pa.

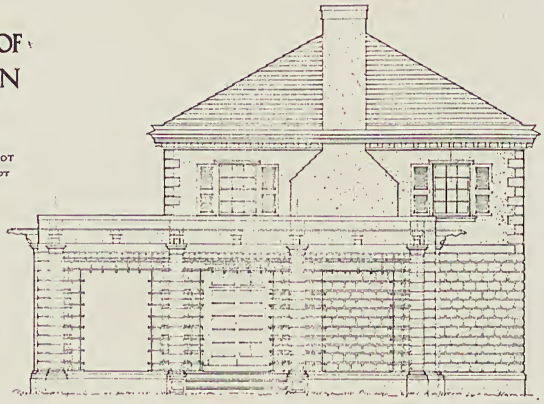


DESIGN SUBMITTED BY CLAUDE W. BEELMAN
430 American Central Life Building, Indianapolis, Ind.

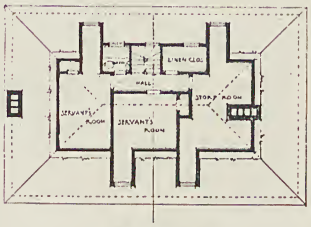
BRICKBUILDER FIRE PROOF HOUSE COMPETITION

PENATES

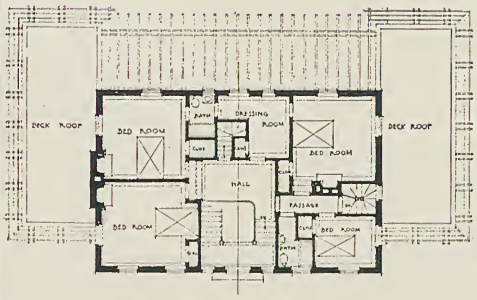
SCALE FOR PLANS ⅛ INCH EQUALS ONE FOOT
SCALE FOR ELEVATIONS 1/16 INCH EQUALS ONE FOOT



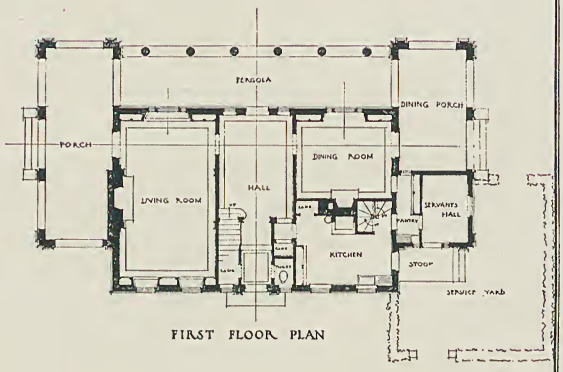
SIDE ELEVATION



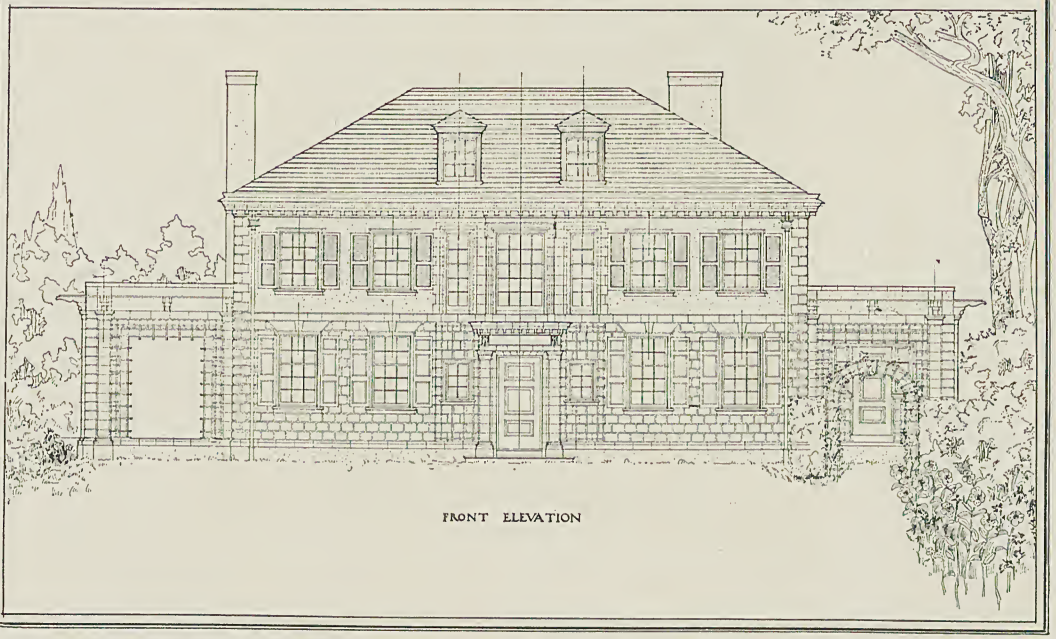
ATTIC PLAN



SECOND FLOOR PLAN



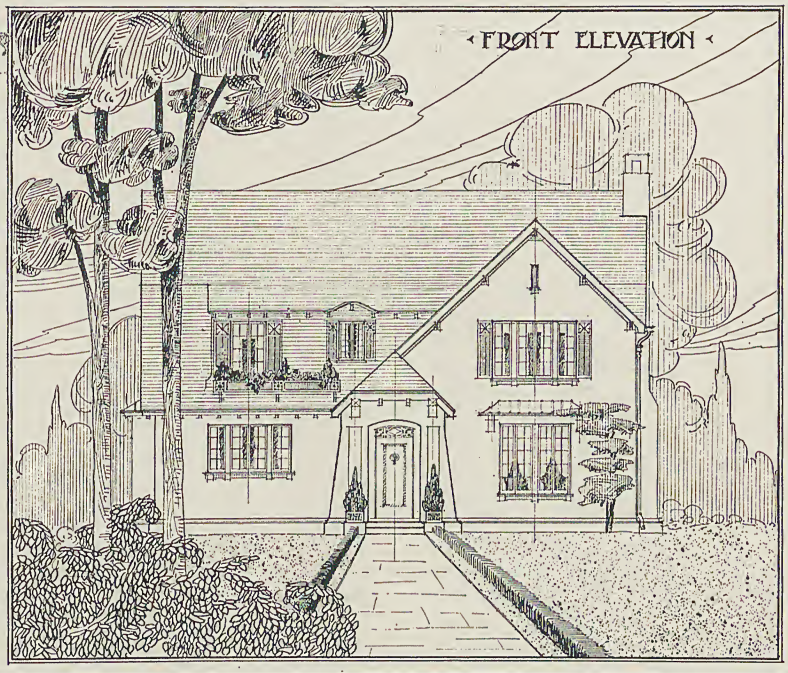
FIRST FLOOR PLAN



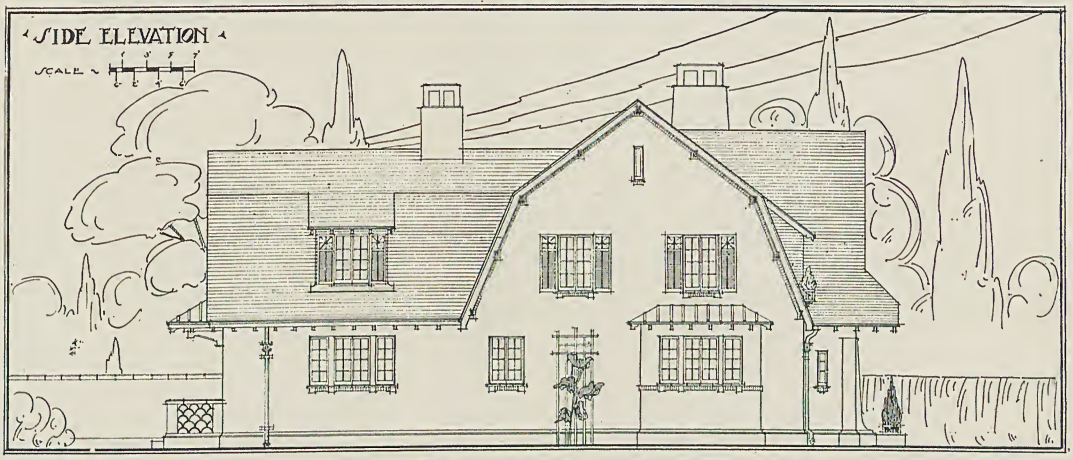
FRONT ELEVATION

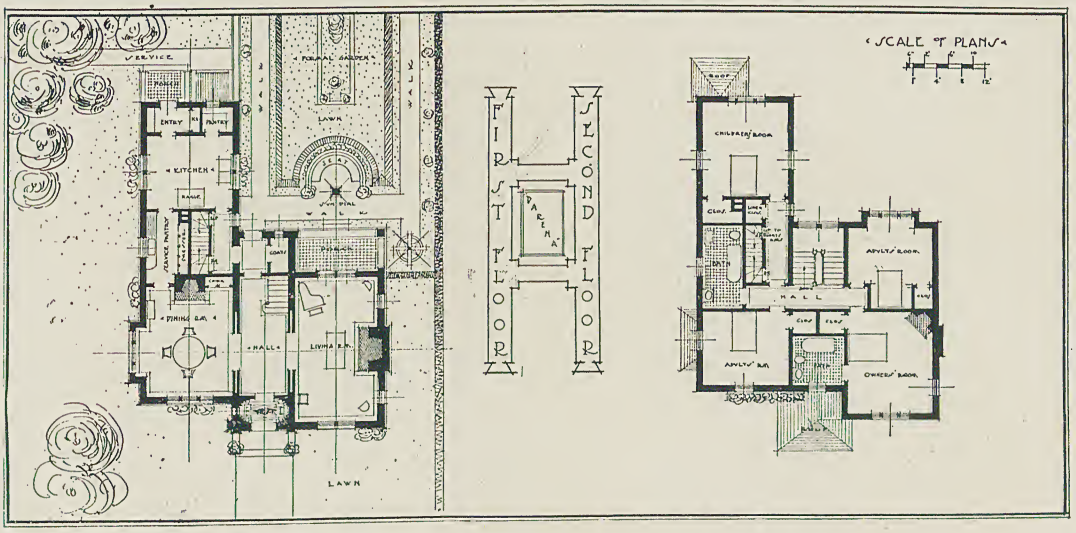
DESIGN SUBMITTED BY RUSSELL EASON HART
475 Fifth Avenue, New York City

FIREPROOF HOUSE COMPETITION

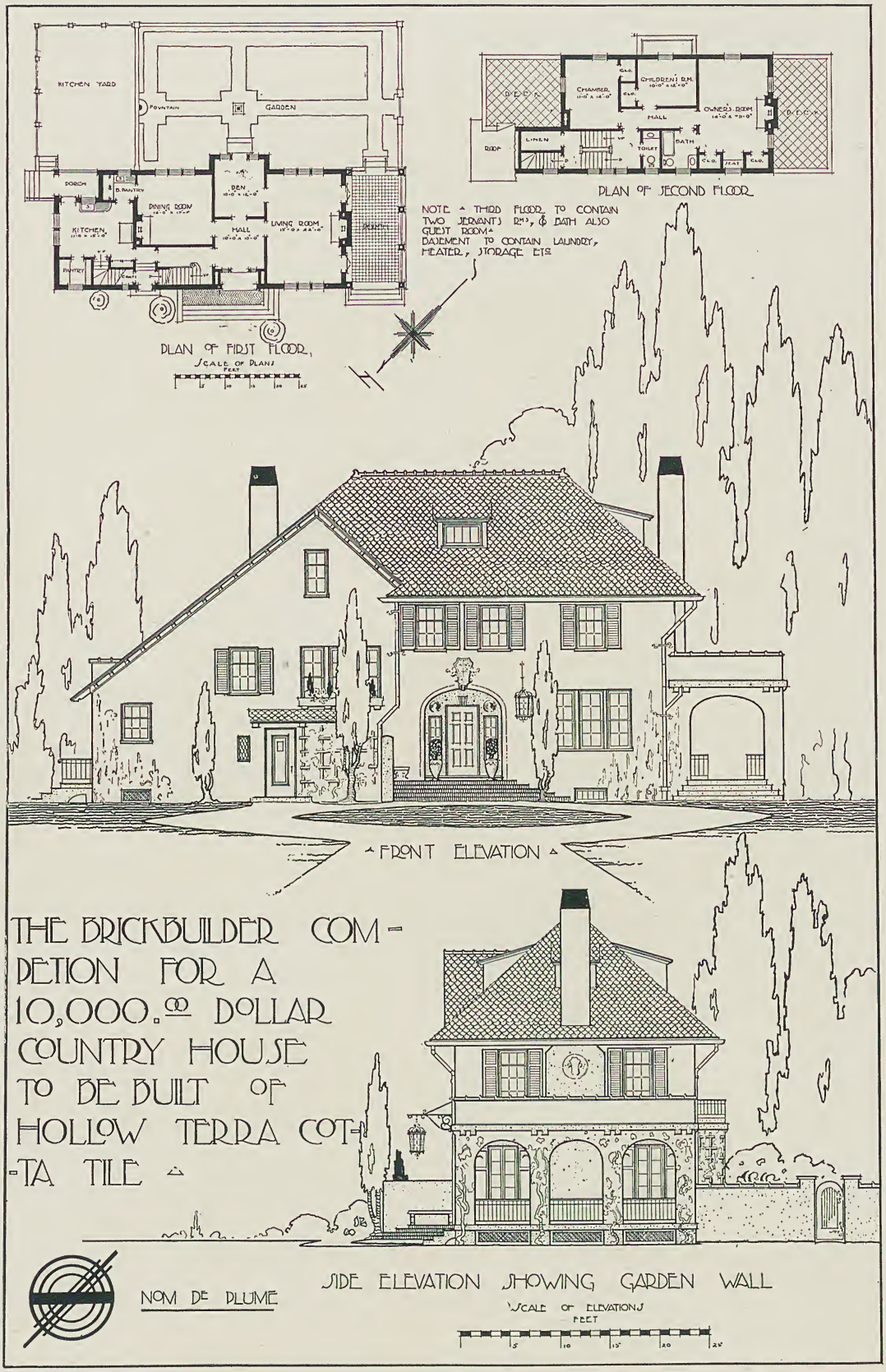


BRICK BUILDER SUBMITTED BY DARENA.





DESIGN SUBMITTED BY FRED B. O'CONNOR
232B. Ontario Street, Albany, N. Y.



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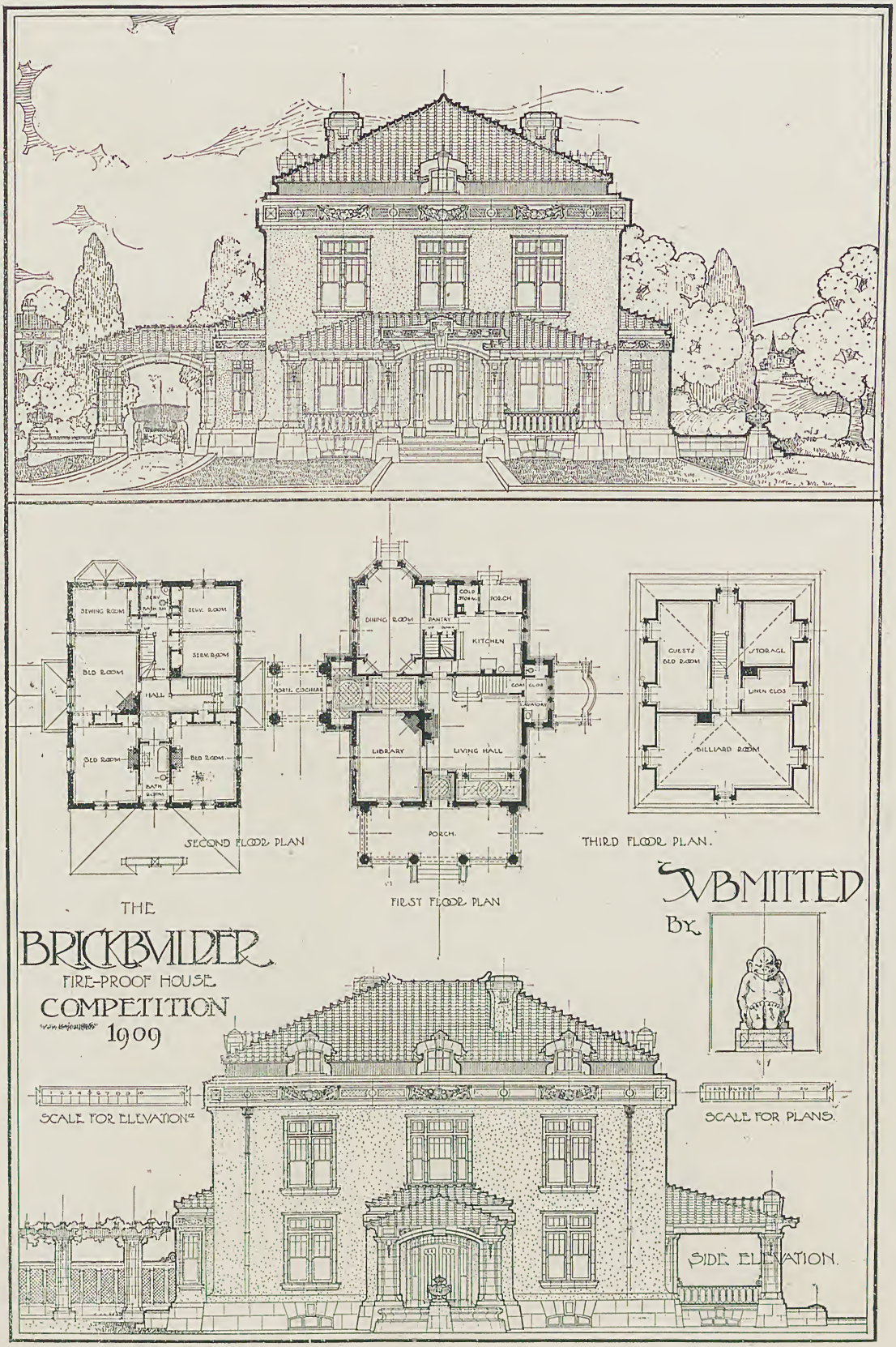
6 East 85th Street, New York City



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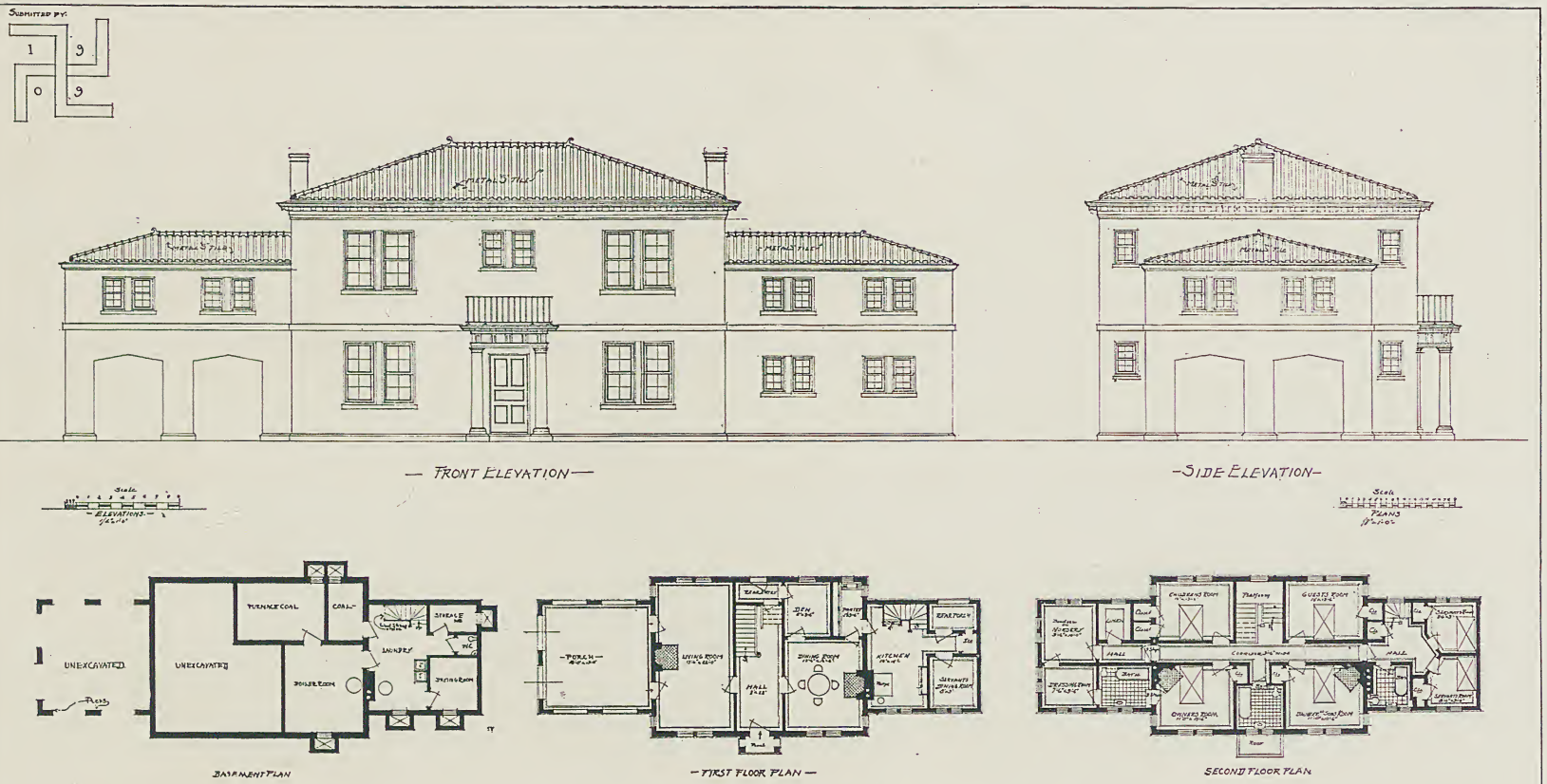

BRICKBVILDER COMPETITION.

DESIGN SUBMITTED BY J. THEODORE BLOMQUIST
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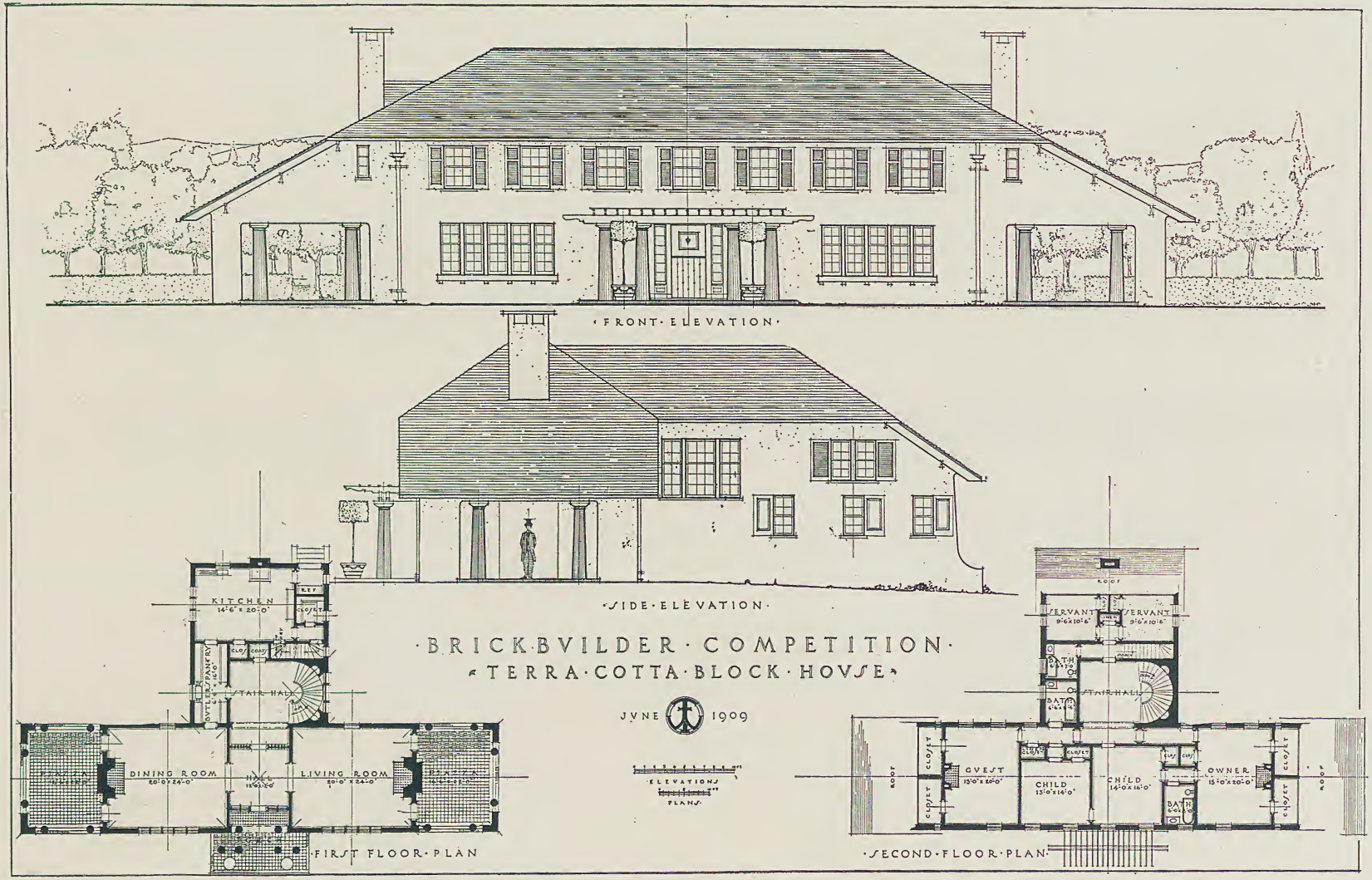

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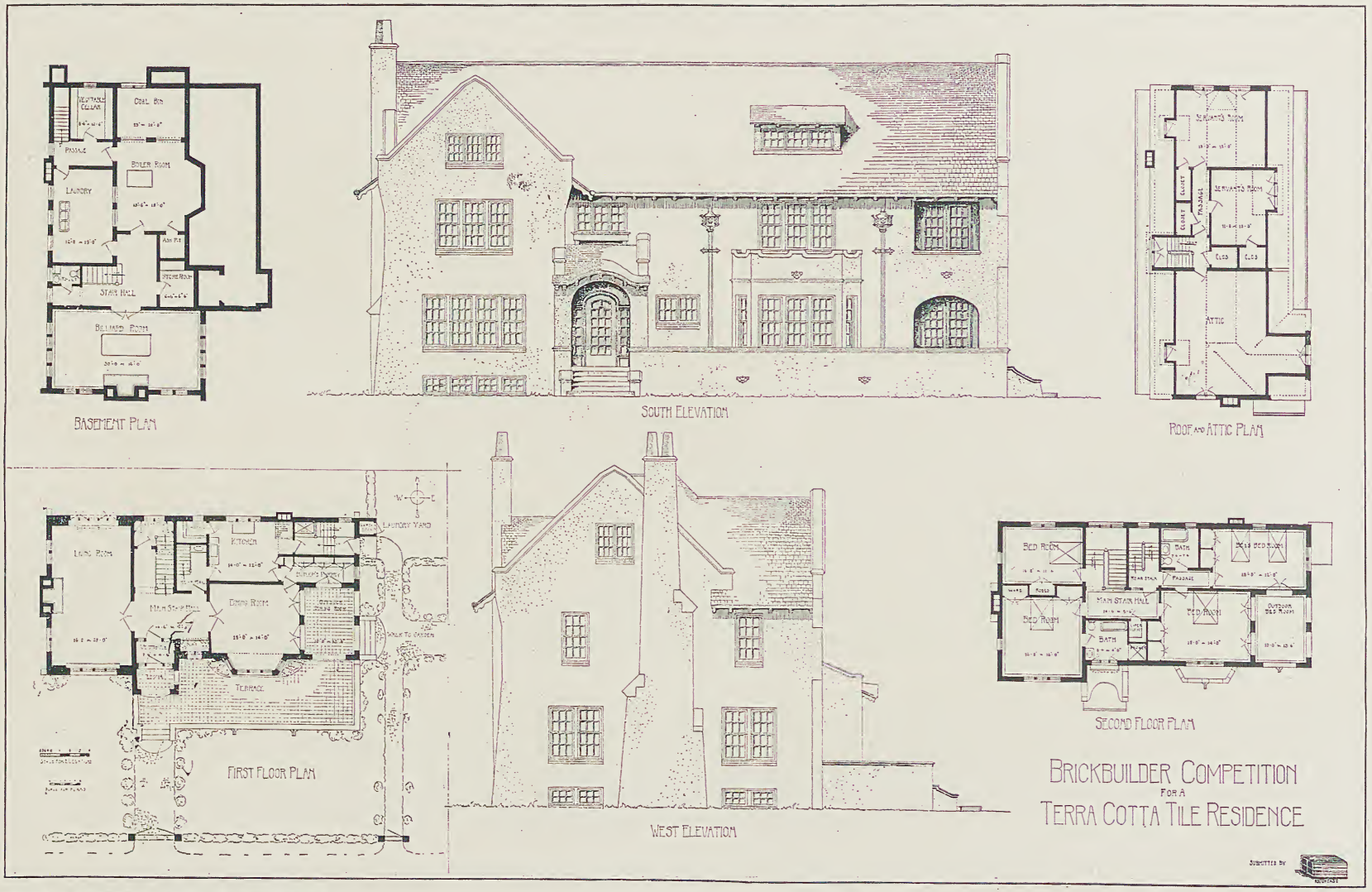
481 Fifth Avenue, New York City

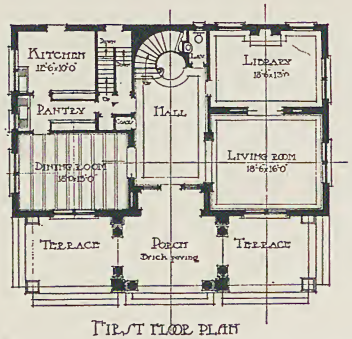


DESIGN SUBMITTED BY FERNEKES AND CRAMER
Pabst Building, Milwaukee, Wis.

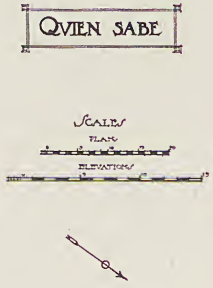
FRONT ELEVATION

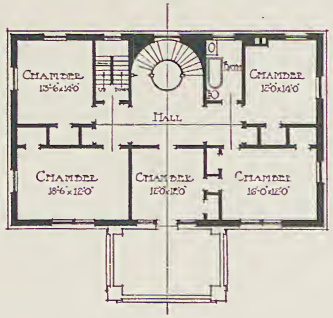
SIDE ELEVATION

THE BRICKBUILDER FIRE PROOF HOUSE COMPETITION



FIRST FLOOR PLAN





SECOND FLOOR PLAN

DESIGN SUBMITTED BY WM. M. O'DONNELL
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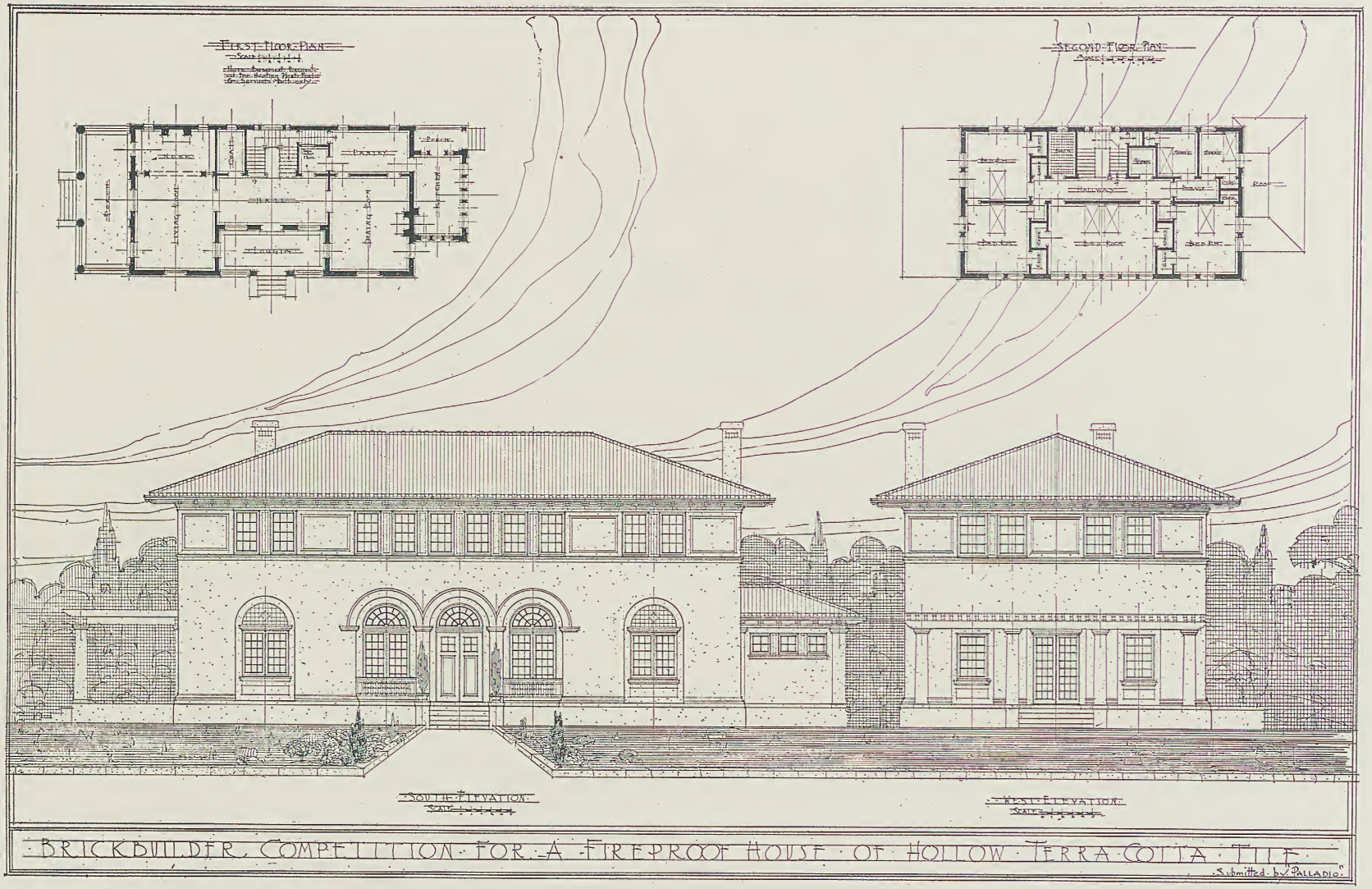
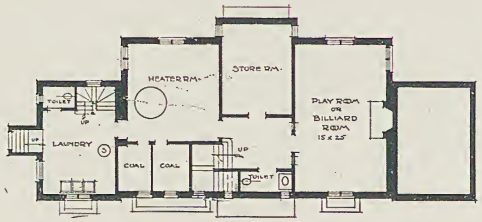


DESIGN SUBMITTED BY HARRY FRANCIS CUNNINGHAM
1627 Lamont Street, N. W., Washington, D. C.

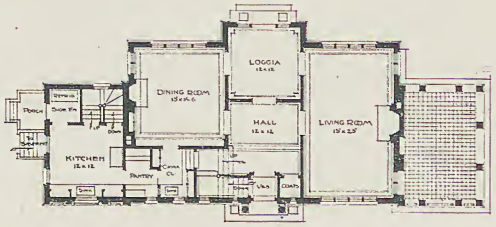
FRONT ELEVATION

SCALE FOR ELEVATIONS

END ELEVATION

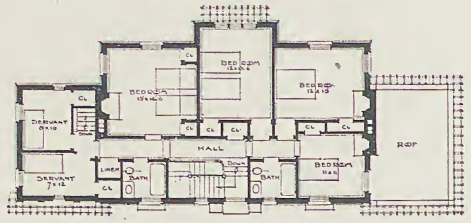


BASEMENT PLAN



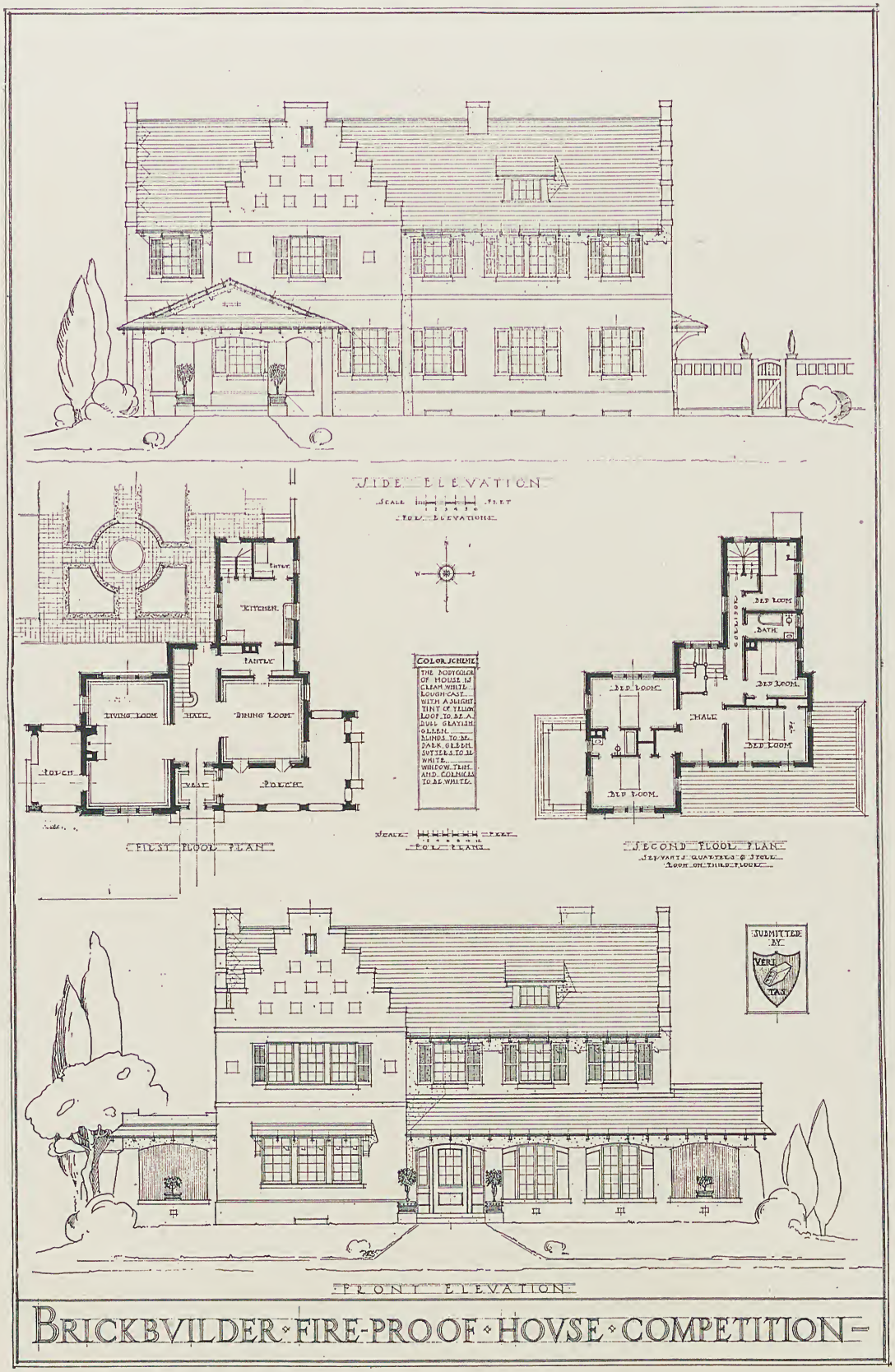
FIRST FLOOR PLAN

SCALE FOR PLANS



SECOND FLOOR PLAN

DESIGN SUBMITTED BY ROBERT H. WAMBOLT
3 Hamilton Place, Boston, Mass.



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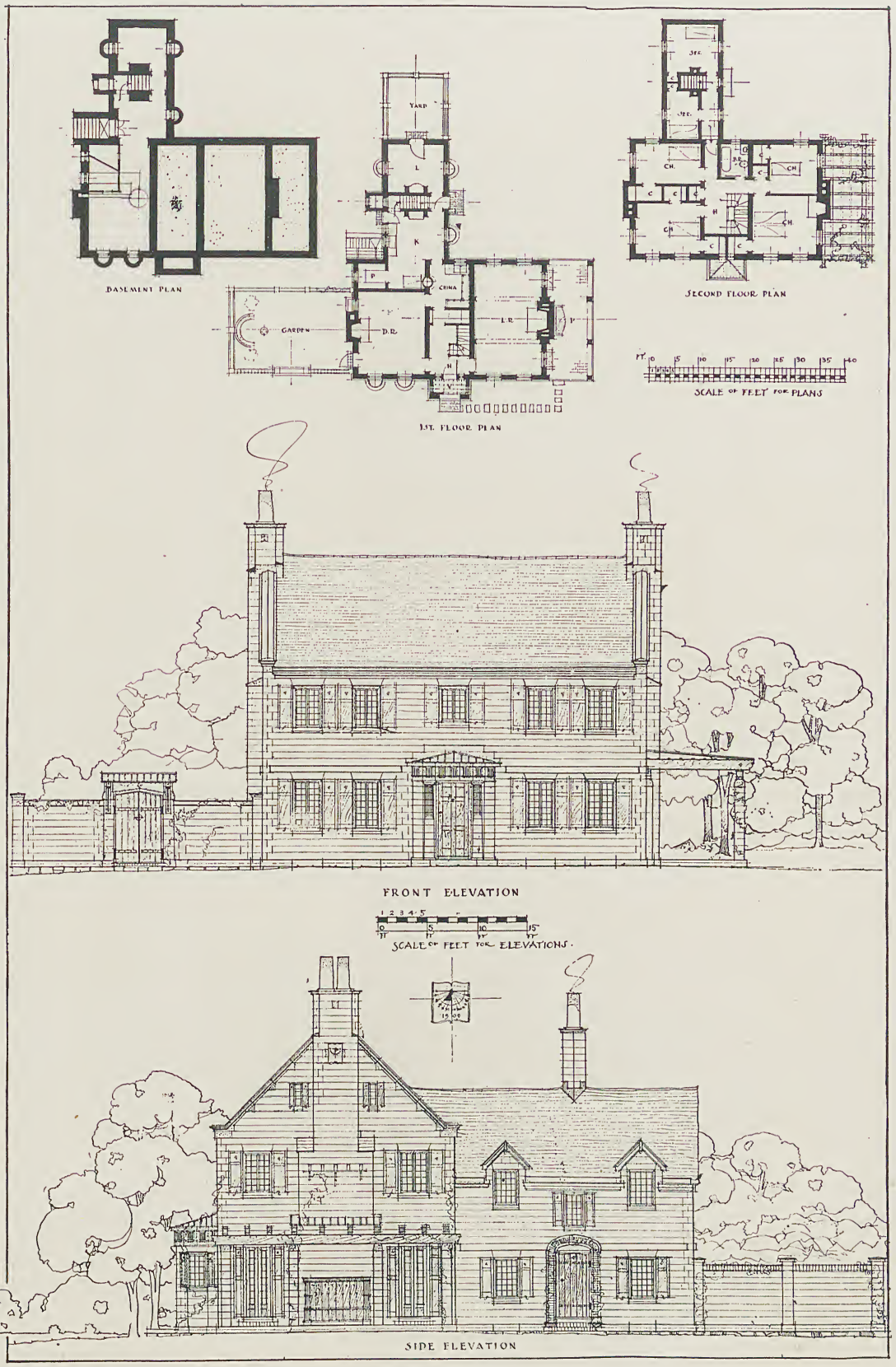
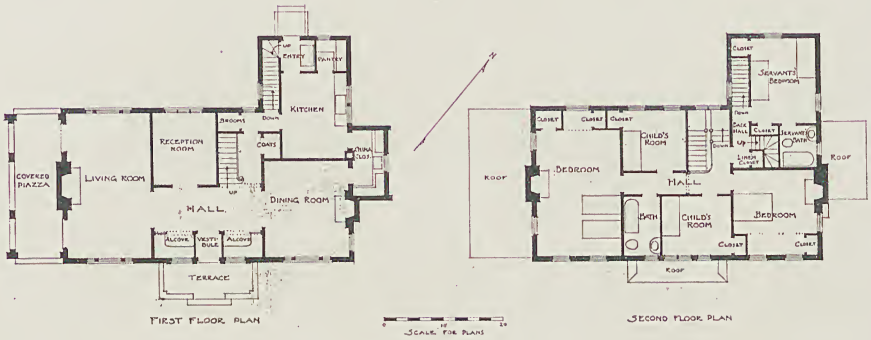
East Aurora, N. Y.



DESIGN SUBMITTED BY GRIFFIN H. SIMS
144 Congress Street, Boston, Mass.

FRONT (SOUTHEAST) ELEVATION

SCALE FOR ELEVATIONS



FIRST FLOOR PLAN

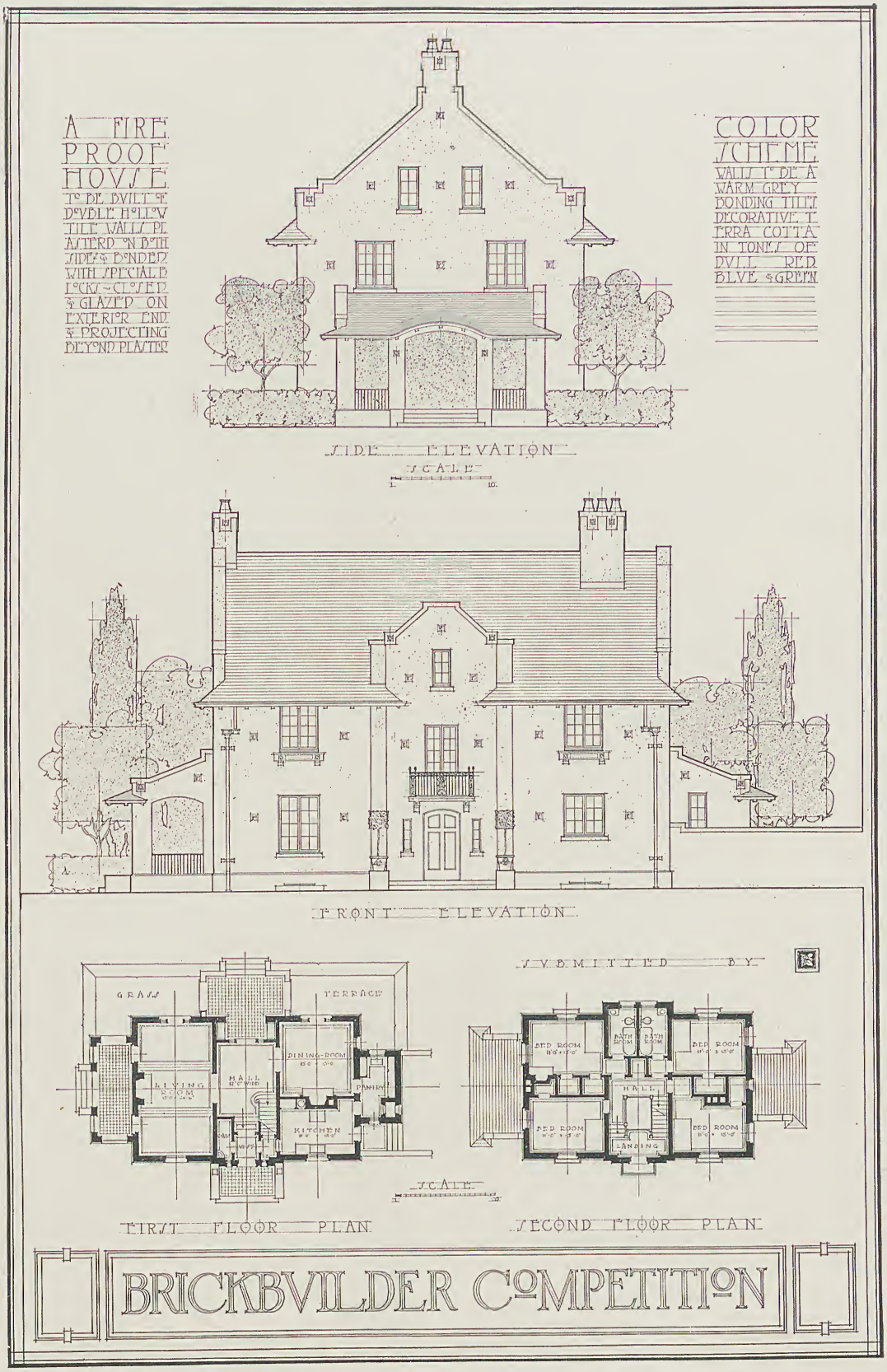
SCALE FOR PLANS

SECOND FLOOR PLAN

SOUTHWEST ELEVATION

THE BRICKBUILDER COMPETITION FOR A FIREPROOF HOUSE
SUBMITTED BY "TILE"

DESIGN SUBMITTED BY BENJAMIN PROCTOR, Jr.
46 Cornhill, Boston, Mass.

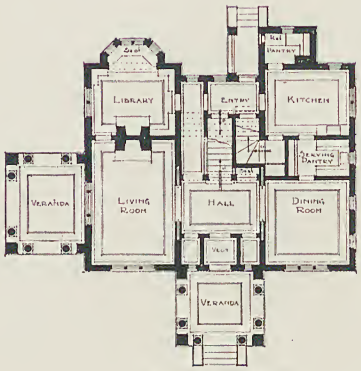


DESIGN SUBMITTED BY MARR AND MOISE
12 Kirkland Place, Cambridge, Mass.

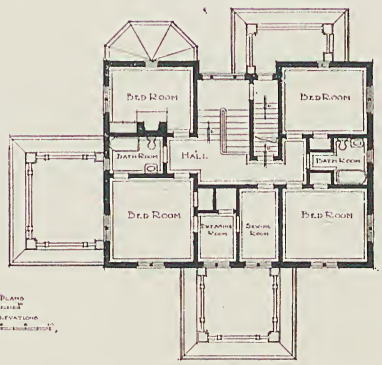
BRICKBVILDER COMPETITION FOR A HOUSE.

SUBMITTED BY (XX)

FRONT ELEVATION



FIRST FLOOR PLAN



SECOND FLOOR PLAN

SOUTH ELEVATION

DESIGN SUBMITTED BY OSCAR T. LANG
3753 Upton Avenue, North, Minneapolis, Minn.

The Fireproof House—A Wise Investment

BY SYLVESTER BIGELOW

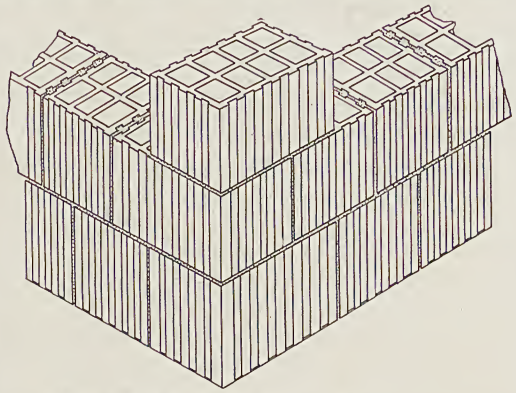
IN HOLY WRIT we read the parable of a wise man who built his house upon a rock. "And the rain descended, and the floods came, and the winds blew, and beat upon that house; and it fell not: for it was founded upon a rock." But there was another man who built his house upon sand, and the house fell.

Now, it is more than likely that the sand-house was just as beautiful in the beginning as the rock-house; that it had graceful lines, harmonious coloring, skilfully placed doors and windows. But its beauty availed it naught when the storm came. Its owner had "saved" on the price of his land, and had met the fate of all who mortgage the future for the gain of a day.

Many thousands of men, in these times, are imitating the man who chose sand for his foundation. They are inviting destruction — if not sudden destruction, then decay, depreciation — by the choice of flimsy frame construction. And most of them are doing this simply because they are uninformed, because they do not know what is to their best interest.

It is our purpose here to put aside all so-called sentimental ideas. For a minute or two we shall discuss the fireproof home as a business proposition pure and simple. Which is the wise investment, Mr. Home-Builder, a fireproof home or a fire-trap home?

In the first place, the age of cheap lumber is past. Lumber is expensive, and is growing more expensive every day. Moreover, the quality of it, as it appears on the market, is deteriorating steadily. On the other hand, terra cotta hollow tile, the best fireproof building material, now brought to perfection by improved manufacturing processes, has become cheaper. This movement — the rise in the price of one, the fall in the price of the other — has made the difference so small that *there is no longer any doubt of the economy of the fireproof home.*



Hollow Tile Showing Corner Construction

This is true whether the cost of the house is to be $5,000, $50,000, or $100,000. Hollow terra cotta is equally available, equally cheap, equally convenient, for the rich and the poor. If anything, its benefits are greater for the man of small means, for only the rich can afford such expensive luxuries as houses made of wood.

Consider, for example, the case of the citizen who has planned to build a $6,000 frame house on a $2,000 lot. He owns the lot, say, and has $4,000 in cash. It is necessary to borrow $2,000 more.

For an increase of fifteen per cent over the cost of frame construction this citizen can build him *an all-fireproof home* — terra cotta hollow blocks for walls, floors and partitions. The cost of the house then becomes $6,900, the sum to be borrowed becomes

$2,900. It will be easier to obtain the larger sum for fireproof construction than the smaller sum for frame. The difference in the interest on the loan, at five per cent, will amount to $45 a year.

The saving on fireproof construction starts when the masons start to work. It keeps up forever.

First, there is the difference in the annual cost of insurance. As a matter of fact, the owner of a hollow tile house needs no insurance at all for the building itself. If he insists upon having it, however, for the sake of the "trimmings," he will find the premiums far lower than the premiums on frame. The rate on the latter is *two and a half times as large* as the rate on a house in which no wood is used for structural parts. In some instances the ratio is still greater.

It's a lucky man who, owning a frame house, does not have to call in the carpenter for some "tinkering" job before the house is a year old. And the knight of the hammer and saw makes his calls more and more frequently as the years pass. A frame building wears out from the beginning. A house of hollow tile, once up, needs no further treatment. There is nothing to break, nothing to wear away, nothing to decay ; no repair bills.

A wooden house must be painted every two or three years, if it is to keep a presentable appearance. At each painting the owner has to diminish his bank account by, say, $100 or $150. If it is a large house the sum is larger. There is no such thing as painting a house of terra cotta blocks. When it is first put up a cover of stucco is applied to the outer surface of the blocks — stucco of any color the architect may select. Instead of damaging it, the rain and winds give to this surface the quality which artists call *tone*. And the appearance of the house grows better instead of worse.

When the plaster in your rooms is laid upon wooden lathing it stays firm for a time, then begins to crack. The wood behind it has warped. The plasterer comes to do away with the cracks, and presents a bill. Plaster applied to terra cotta does not crack. It has no reason to, for terra cotta cannot warp. There is no plasterer, and no plasterer's bill.

Coal bills are a terror. The supply of domestic fuel is a limited quantity, decreasing steadily, and all coal men agree that if there is any change in prices it will be upward. He who so builds that his need for fuel will be kept at the minimum, that man puts money in his purse. Terra cotta hollow blocks are the best non-conductors of heat among all building materials. The "dead air" spaces inside help to give them this quality. Terra cotta walls keep the heat in the house in winter. Incidentally, they keep it out in summer ; and that also means economy.

The conservation of health is no small consideration from a business standpoint. We all know that physicians are benevolent and deserving folk, but none of us are anxious to contribute much to their support. There is probably nothing so effective in producing illness as a poorly constructed, draughty house. If you have the right sort of place to live in, warm in winter, cool in summer, you have won the first great battle in life's campaign against disease and doctor's bills.

Finally let us suggest, Mr. Home-Builder — though we hope it will never so fall out — that there may come a day when you will find it necessary to sell your house. This may happen to anybody. When you seek a purchaser, would you like to show him a building that is as good as new, one in which there has been no depreciation? That is what you can do if you build with terra cotta hollow blocks.

HOUSE AT ORANGE, N. J.
(Built with Natco hollow tile.)
Dillon, McLellan & Beadel, Architects, 1123 Broadway, New York City

The Warmth and Dryness of Terra Cotta Hollow Tile Walls

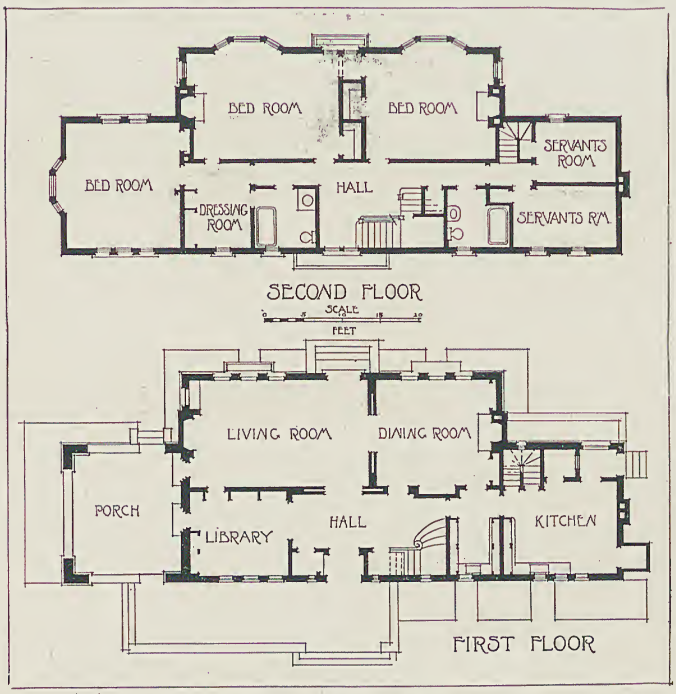
BY MARTIN A. WELLES

AMONG the chief advantages of hollow tile as a building material are its warmth and dryness—its ability to keep out cold and moisture. It is generally supposed and taken as a matter of course that wooden houses are the warmest and driest. Actually, they are much less so than properly built masonry houses of any kind, and very much less so than houses of hollow tile. The reason of this common error lies, no doubt, in the fact that continued use and custom have reconciled us to the disadvantages of wooden houses and we accept their discomforts as a matter of course. Draughts and the innumerable lurking places for vermin of all kinds are disregarded, and the great and ever-present danger of fire comes to mind only when we see some house, perhaps even our own, reduced to ashes in half an hour. We do not reflect that perhaps the warmth of wooden houses comes from an extrava-

gant use of coal, and the dryness from the large amount of air that is constantly escaping from them by leakage through countless cracks.

On the other hand; until recently few persons have had an opportunity of comparing, by actual use, the comfort of hollow tile houses with the customary disadvantages of wooden construction. But it needs no demonstration to show how much better it is to use a material that permits no cold air to come through the walls and up through the floors; that affords no passages of inflammable material for fire; that gives no refuge for rats and bugs. A little consideration will show plainly that as an insulating material in keeping out cold hollow tile has this superiority.

The warmth of a house depends on the conductivity and lightness of its walls. Conductivity is the ability of transmitting heat, and materials differ greatly in this respect. An iron poker heated at one end soon becomes too hot to hold at the other, while a stick of wood can be held quite close to where it is flaming. This is because the iron passes the heat along quickly, while the wood passes it along slowly. The relative rates at which different materials transmit heat have been measured; by applying these rates to the materials which make up the walls of a wooden house and of a hollow tile house respectively, we can arrive at a close measure of their comparative insulating or heat-retaining values. The rate of the wood is 0.0001, of plaster 0.0001, of terra cotta 0.00015. Taking the total of the solid materials in each case — the outside sheathing, clapboards or shingles, the paper, the rough sheathing, the studs and the inside plaster of the wooden wall — and the stucco, the webs of tile and the inside plaster of the hollow tile wall, we get a ratio of 5825 to 10390; that is to say, the hollow tile wall is nearly twice as good as the wooden wall, air spaces not considered.



PLANS OF HOUSE AT ORANGE, N. J.
Dillon, McLellan & Beadel, Architects

But the air spaces are of the greatest value. The rate of conductivity of air (0.00005) is very low, and it adds greatly to the insulating value of the walls. As the

air space in the wooden wall is about the same thickness as the two spaces in the hollow tile wall, it would seem that the increased values were equal; but air in spaces of appreciable size does not transmit heat by conduction, passing it from particle to particle, but by convection — the movement of the heated particles from place to place — and the rate at which heat is thus transmitted across one air space of the hollow tile is about the same as that at which it is transmitted across the single larger space of the wooden wall. This principle is applied constantly in the construction of refrigerators, where the air space in a wall of a given thickness is divided into as many separate layers as possible. The two air spaces in the hollow tile wall are therefore much more valuable, approximately twice the value of the one in the wooden wall. The entire hollow tile wall, air spaces and solids together, is therefore considerably more than twice as efficient as the wooden wall.

DETAIL OF ENTRANCE
HOUSE AT ORANGE, N. J.

This does not take leakage into account. The wooden wall has been considered as though its layers were air-tight; as a matter of fact they never are air-tight. The joints in the clapboards and sheathing, the laps of the building paper, and the cracks that appear on the plaster of all wooden houses let the air pass in and out freely. It is constantly being admitted from without into the air spaces, absorbing the heat from the house and carrying it off as it passes out again. No matter how tightly the wood may have been put on it swells and shrinks with every change of humidity and temperature, so that the cracks are constantly reopening. In extreme cases the wall is reduced, so far as its heat-retaining power is concerned, to little better than the one layer of inside plaster, and that more or less cracked.

A hollow tile house has no cracks. There is no joint all around at the first floor level, as there is at the water table of wooden houses, where the cold air leaks in and makes the floors cold. If there should be any joints left open between the blocks by careless workmen they are closed up by the plastering. The plastering does not crack. In wooden houses plastering cracks because the wooden frame expands and contracts while the plaster does not, and because the wooden frame bends and sways while the plaster is rigid. There is always a crack where the plaster on a chimney joins the plaster on a wooden wall, for in wet weather the wood swells and moves up and in dry weather shrinks and moves down carrying its plaster with it while the chimney stays in place. There are, generally, diagonal cracks in the plastering of

wooden houses that reopen, no matter how often they are stopped up. They are due to the swaying of the house in the wind, or to bending caused by the movement of people or furniture across the floors. Hollow tile walls have none of these movements. They neither swell, shrink nor sway in the wind. They are if anything more rigid than the plaster, and do not crack it, so that in this respect they are air-tight and lose none of the benefit of the air spaces by leakage. The exact superiority gained by this cannot be definitely computed, but it is well within the mark to put it at four times better than wood — and that means that under equal conditions a wooden house will use four times as much coal as a hollow tile house to keep up the same temperature.

HOUSE AT ORANGE, N. J.

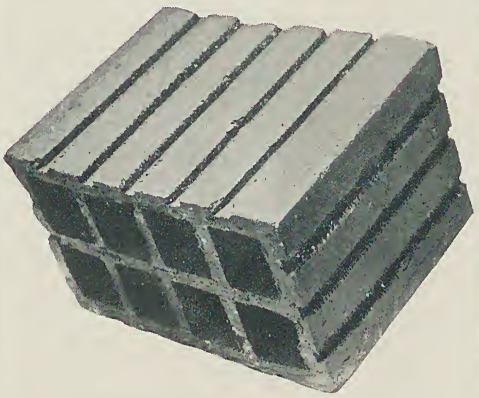
The idea that a wooden house is the driest kind of a house has no more foundation than the idea that it is the warmest. A house is generally called moist or dry as its walls are seen to be moist or dry, and it is usually supposed that the moisture comes through the walls from without. It is said that in severe winds rain will be driven through a brick wall, but such cases are extreme. A brick wall absorbs some moisture, but scarcely sufficient to be perceptible on the inside, and hard terra cotta even when unprotected by a coat of stucco absorbs an inappreciable amount.

The dampness observed on the inside face of exterior walls comes from condensation. Air absorbs a certain amount of water, dependent on its temperature — the higher the temperature the more moisture it can contain. If its temperature is lowered beyond the point at which it can carry the moisture it contains the superfluous moisture is condensed and deposited. If a wall transmits heat readily it will condense the moisture of the air and become damp ; if it is a good non-conductor it will not condense the moisture and will be dry ; — and just in the same degree as it is warmer, so is a hollow tile wall drier than one of wood.

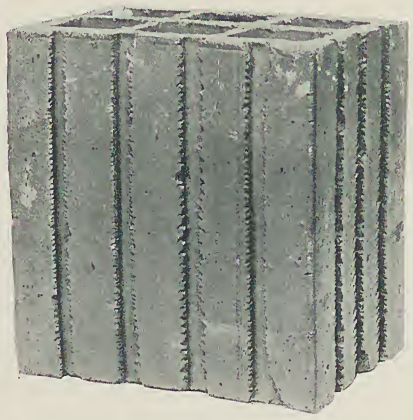
Stucco in Relation to Terra Cotta Hollow Tiles

BY S. D. DAY

THE use of stucco, or as some would say "cement finish," is, comparatively speaking, a new idea in America. It was introduced about the year 1895 from Europe where many localities are most picturesque with their charming houses in stucco. For hundreds of years the architects of Italy, Belgium, England, Spain and other countries employed this material in a practical and artistic manner. The surfaces of the houses were finished in cement having a soft and delicate shade. In Cuba a delightful pink color is obtained by the use of white cement and coral sand, a combination that has never been used in our own country. The naturally tinted sands mixed with the proper kind of cement will furnish any color desired, although time alone can mellow and harmonize the whole effect. And in this connection it may be stated that all artificial mortar colors should be avoided in obtaining the different shades, as unnatural colors do not last.



Terra Cotta Hollow Tile Block
Size 16 in. by 12 in. by 12 in.



A Standard Terra Cotta Hollow Tile Block
Size 12 in. by 12 in. by 8 in.

Note grooves on tiles for holding plaster

The walls of the houses erected abroad were built of brick and stone. These materials used as a solid backing for the cement kept the surface of the outside coating always smooth and unbroken. But how different is the appearance of our early stucco work. At the time this idea was introduced here we were erecting wooden buildings in large numbers. The wood was inexpensive and houses were in great demand. The simple and attractive design of the stucco house impressed the people. They realized that a cement finish could be used upon wood so as to be beautiful as well as cheap. The studding was covered with metal lath or wire cloth upon which was placed the stucco finish.

But it was not long before grave doubts arose as to the practicability of using stucco on wood and metal lath. The surfaces began to crack and break at the corners in zigzag courses from eight to ten feet long. At first this was attributed to the severity of our climate and the sudden changes in the temperature. The complaint soon became universal and a careful study was made as to the cause. The investigation showed that the fault lay in the combination of wood and masonry materials. The stucco would carry the moisture through to the metal lath and wood, causing the former to rust and the latter to swell. Cracking of the walls was inevitable under such conditions. The life of the metal lath was never more than five years at the most, unless the exterior of the house were coated with a waterproof paint. This additional feature made the construction too expensive for the moderate cost building.

In the face of all these facts a substance was needed that would be more lasting than the wooden frame with metal lath, and cheaper than walls of brick and stone. After years of consistent endeavor terra cotta hollow tile blocks were put on the market. They were designed especially to take the exterior finish of cement. They have a dove-tailed key or groove in the surfaces to form an effectual bond with the stucco ; they have two sets of air spaces through the thickness of the wall to insure dryness and they approach more nearly the cost of the frame construction than any other method heretofore tried.

While the co-efficient of expansion is not the same for hollow tile as for stucco, yet they are so nearly alike that if the cement is properly applied and the first coat not too rich, there will be no cracking or semblance of cracks.

The author has had the good fortune to examine a large amount of stucco work executed over hollow tile by an old Scotch mechanic. In some cases the tile was of very inferior quality being under-burnt and smooth on the surfaces without the dove-tailed scoring, but this mechanic had handled his materials so well that they bonded perfectly with the tile. The finished work was absolutely uniform and of a flint-like hardness. This goes to show that if the work is done properly it will be uniform and nearly waterproof.

In order to secure a pure white stucco finish, white Portland cement should be used with white quartz or marble dust. The marble dust has the advantage of making the cement slow in setting which is very necessary in the smooth finish. This work may be carried on from day to day, as the line where the workmen stop will not show, since the surface is pliable enough to work in with the fresh stucco. But no work should ever be let at too cheap a price. Seventy-five cents per square yard is about the minimum cost consistent with good work.

The following specifications have proven satisfactory in regard to work already executed, and will produce excellent results if followed carefully : — Before applying the first coat see that the blocks are damp, to prevent the mixture from drying out too rapidly, and a consequent weakening of the same. This coat should be composed of one (1) part Portland cement, three (3) parts clean sand and a small percentage of lime putty. It should be ½ inch thick and applied under pressure with trowels. Cattle hair or fiber may be added to give strength to the mass. Scratch this coat lightly but carefully with a wire broom to create a bonding surface for the second coat. While the first coat is still damp apply the stucco finish with a wooden paddle or broom. The second coat should be ¼ of an inch in thickness and should be composed of one (1) part Portland cement and two (2) parts clean, sharp sand.

For three years terra cotta hollow blocks have been used with wonderful success. The more progressive architects and contractors throughout the country are designing and erecting houses with stucco applied to walls built of these blocks, and it is safe to predict that in the very near future builders will more generally demand this construction in specifying materials. This will be the natural outcome when all realize that stucco applied to these blocks not only keeps the interior of the house warmer and drier, but at the same time preserves forever the beautiful surfaces and texture of the exterior.

The New Era in House Construction

BY W. LESLIE WALKER

(Firm of Walker & Chichester, Architects, 103 Park Avenue, New York)

DURING the last fifteen years in this country the problem of the country residence has received more attention and made greater progress, as far as convenience, comfort and artistic merit are concerned, than at any other period in our history. Unfortunately, however, until very recently the economic side of the problem has not kept pace with the artistic development; by which I mean that architects and builders have been content to design and construct country houses of frame, brick or stone following the old method of construction, modified only in minor details.

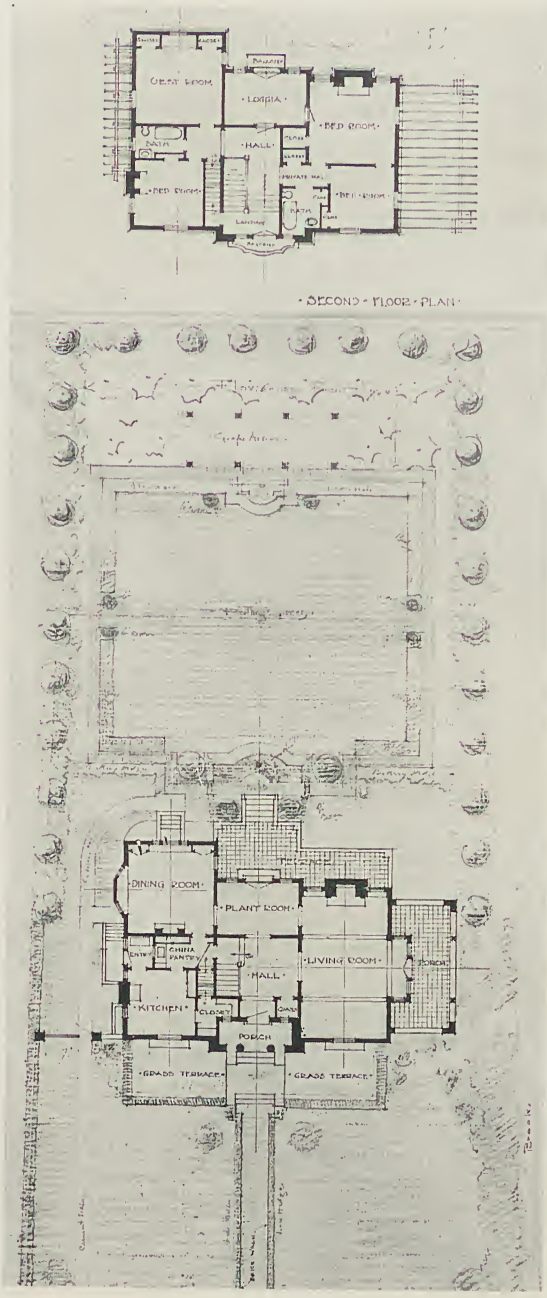
The various reasons for this do not concern us now, but the question of vital importance is the development in the future. We are entering upon a distinctly new era in building construction, especially in country and suburban houses.

The depletion of our forests through the ever increasing demands for building purposes, of railroads and for many other uses, together with the great loss by fire, has caused a large increase in the cost of lumber and will continue to do so; the increasing cost of all kinds of labor, the appalling annual loss of buildings by fire; then, too, the general desire on the part of the owners to build better, more permanent and desirable homes, thus securing greater comfort and lessening the annual depreciation and repair bills — all these reasons or causes are essentially economic and in line with all material progress in this country to-day, and have operated through the efforts of manufacturers, architects and builders to make the fireproof and indestructible house possible, and at only a small increased cost over the frame building.

The cheapness and consequent general use of Portland cement has assisted in bringing this about. We hear a great deal at the present time about concrete or cement houses, and while a number of successful houses have been constructed of this material, many of the much advertised methods have still to be tried in actual, practical demonstration, and their merit and economic value determined.

From my own experience I believe the hollow brick or terra cotta construction is the best for the country residence. As an architect, greatly interested in this progressive movement, it seems to me that the hollow terra cotta tile fireproof construction, properly carried out, is the ideal method of construction for country houses; it is no longer an experiment, as it has been tried out and is being adopted by some of the best architects in the country for their own houses as well as for their clients' houses.

That not only architects, but also the general public and prospective home builders, are interested in this form of construction has appeared from the numerous inquiries which have been made in regard to it. In view of this fact, which is most encouraging, no opportunity should be lost to stimulate this interest which must result in better and more substantial homes for all classes, rich and poor, for this form of construction is bound to be an important factor in solving the much discussed "Housing" problem.



PLANS OF HOUSE AT MONTCLAIR, N. J.

Having designed and built a number of residences and other buildings, of this construction, and especially my own house, in which I have had an opportunity to observe the results under all conditions, summer and winter, it is possible to speak from experience, and I am glad, for the benefit of those who may be interested, to answer, out of my experience, some of the questions which have been asked. To answer some of these, however, would require pages and be rather technical, which is far from the intent of this article. Perhaps the first to be considered should be, "How is the house constructed?" and from this the others naturally follow.

Briefly, the cellar or foundation walls are of concrete, though under certain conditions the hollow terra cotta blocks might be used. The outside walls are built of hollow terra cotta blocks each 8 inches thick, 12 inches long, and 12 inches high, laid in Portland cement mortar; the air spaces (two in the thickness of the block) prevent dampness and serve as chases for gas, electric and other pipes; these also permit the reinforcing with vertical steel rods and concrete in case of special weight or stress being applied at any points. The outside of the wall is covered with cement stucco applied directly to the blocks which are specially grooved to receive it. The floors are constructed of concrete beams 8 inches deep; in each is embedded a ¾ inch twisted steel bar; the beams are spaced 12

HOUSE AT MONTCLAIR, N. J.
W. Leslie Walker (Walker & Chichester), Architect, 103 Park Ave., New York City

inches apart and filled in with hollow blocks; on top of this floor construction are placed wood or tile finished floors, as the case may be. All the partitions between the various rooms are built of hollow blocks similar to the outside walls except thinner; these partitions, as well as the outside walls, being plastered directly on the blocks without any lathing. The roof supports, or rafters, may be of concrete seams with hollow blocks between, similar to the floors, and then covered with roofing tile or slate; or, if economy is desired, the rafters may be of wood and covered on the underside with wire lath and cement plaster.

These are the essential points in this construction, simple enough to be mastered and executed by any intelligent mechanic. There are, of course, many minor details more or less technical, including the arrangement of, and provisions for heating and plumbing pipes, etc., but with proper thought and study by the architect these can all be successfully cared for.

Some one has asked whether the wall of 8 inch blocks is sufficiently strong and if the blocks will stay in place. I wish that person might have seen, as I did, the workmen taking down a section of such a wall after it had been built only a few days; it was literally battered to pieces with sledge hammers and bars to get it down and not a whole tile was left that could be used again.

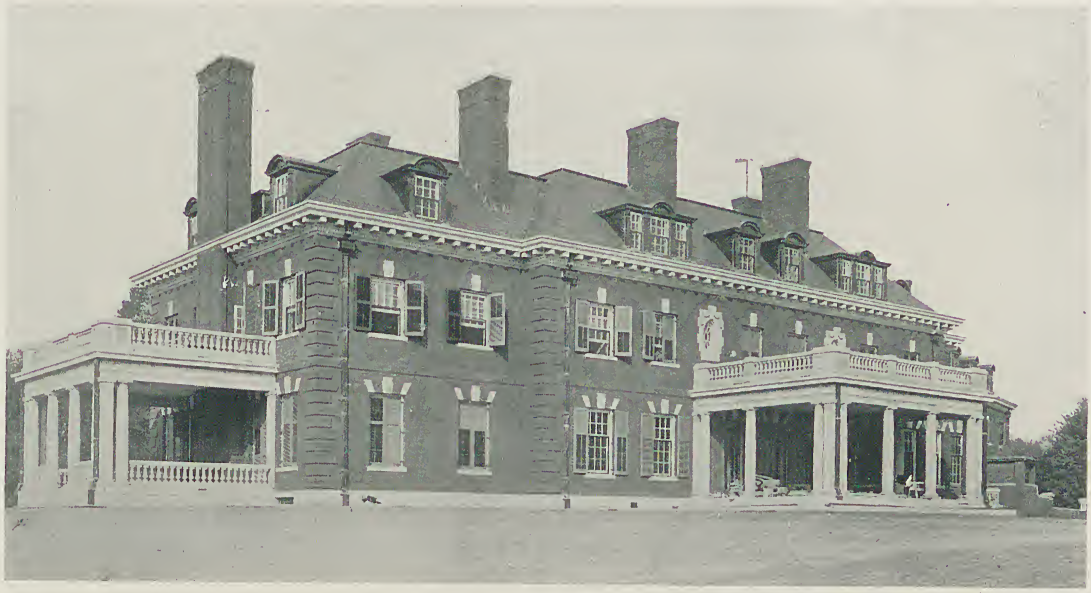
Another asks: "Will not the dampness penetrate the wall, discolor the plaster and make the building damp, and will not the stucco come off the hollow brick wall?" To both of which queries I would say that no such result has occurred in my experience; in fact, quite the contrary, and if the work is properly done this will not occur.

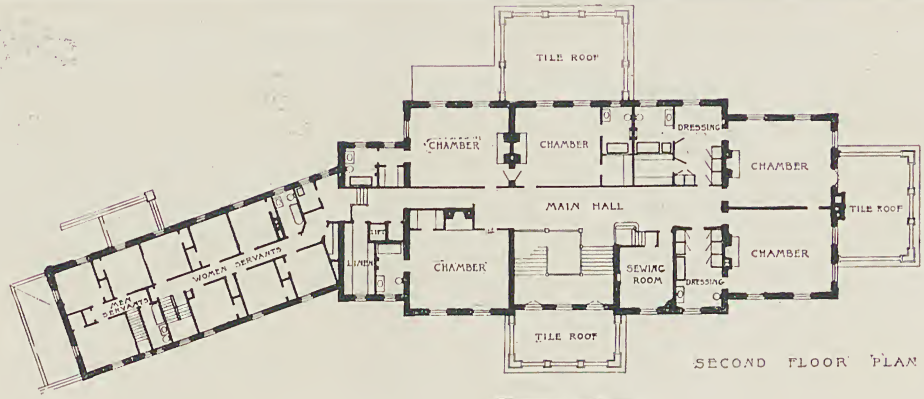
Recently I was asked by a client two questions which come pretty close to the mark: "If you were to build for yourself again would you adopt the same construction?" "Do you advise it for my house?" To both of which I answered without hesitation, "Yes."

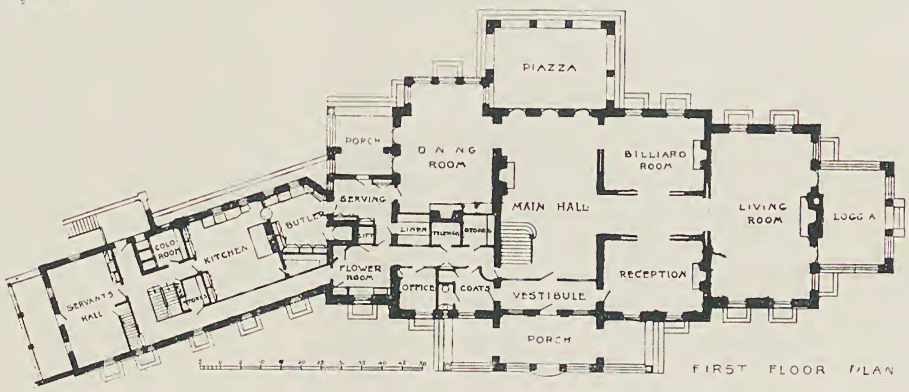
Briefly, what are some of the advantages? Solidity and durability, no cracks in plaster, the reduction of depreciation charges and annual repairs to the minimum. A drier house, one that is cooler in summer and warmer in winter, which means greater comfort and saving in fuel. A building with the fire risk reduced to the minimum, with a sense of security from fire heretofore unknown in country houses; a saving in insurance premiums on both building and contents; a building having a greater loan value and one which would always find a ready market and command a better price in the event of sale.

It is not within the scope of this article to deal with the planning and designing but it is an accepted fact, worth noting, that planning and designing are practically one function, as the trained architect invariably, in planning, conceives a mental picture of his design or exterior; with the hollow brick or tile construction this is especially important, as it has certain limitations tending to simplicity of design, which fact alone should commend it to all who are interested in the best development of domestic architecture, for are not simple dignity and good proportion in design to be preferred to much of the forced picturesque, with slavish copy of forms only, such as shingles distorted to represent thatched roofs?

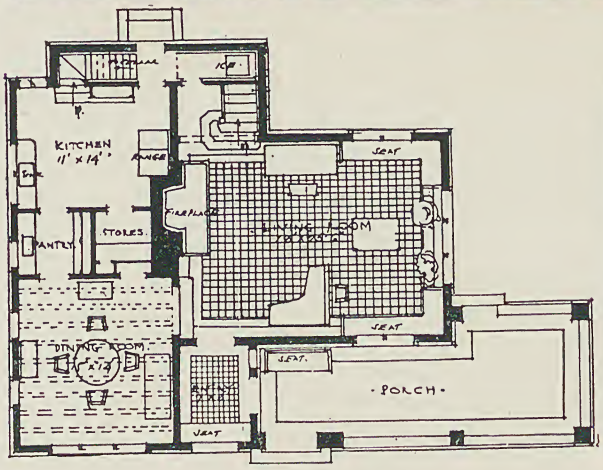
Recently, while talking with a woman about fireproof houses, she remarked, "But you can't get all those pretty curves and features." Now exactly what she meant I do not know, but surely architects should rejoice in a material and method of construction which would make the "Queen Ann" towers, turrets, gables and many "features" impossible.



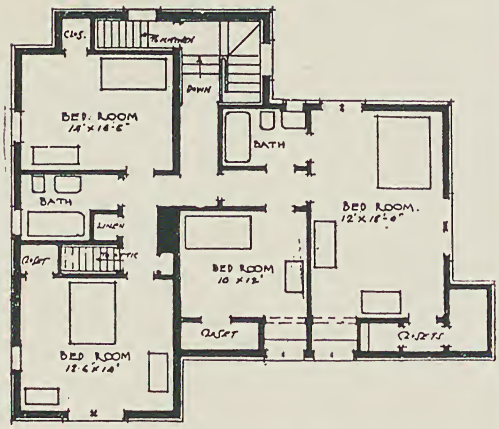




HOUSE AT MADISON, N. J.
(Walls of Natco hollow tile with brick veneer)
Freeman & Hasselman, Architects, 39 West 38th St., New York City



FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

HOUSE AT SOUTH ORANGE, N. J.
(Walls of Natco hollow tile with plaster finish)
Squires & Wynkoop, Architects, 44 Cortlandt St., New York City

Hollow Terra Cotta Tiles—Impregnable Against Fire and Weather

BY HUBBARD WARREN

EVERY new building material has to run the gauntlet of questions and doubts. This should be so. If there is ever a time when extreme caution is justified, when a man should assume the part of Doubting Thomas, it is when he sets out to build a home. Let his motto then be the famous demand that originated in Missouri, "Show me!" And the advocate of any material must be prepared to "show."

At the outset, it should be said of terra cotta hollow tile that it is not a new building material. The substance itself — burned clay — is the same as brick, and was used in the days of the Pharaohs. In this form, the hollow block, it has been used many years for the floors, partitions and column-covering of huge business structures. Millions of tons of it have gone to give strength and permanence to office buildings, hotels, theatres, warehouses and factories in the great cities of the United States and Europe. Hollow terra cotta is new — comparatively new — only as it is used for the structural parts of homes.

House Showing Hollow Tile Construction Before Plaster Finish Has Been Applied

The reason for its rapid rise to popularity among home-builders is simply this — that the tremendous fire losses due to frame construction and the constantly rising price of lumber, have only just now opened the eyes of the American people to the meaning of genuine building economy.

Visiting Europeans have often marveled at the American's disregard of the future in his building operations. At last, after the painful lesson of experience, America is beginning to build against fire. The man of moderate means is looking about him for something better than wood. In his search for the thing that most successfully combines the qualities of low cost, indestructibility, and ease in handling, he comes upon the hollow tile block and finds complete satisfaction.

The prospective builder will do well to take a minute's notice of the way in which hollow tile is manufactured. First the very best quality of clay is selected. It is then moulded into one long piece, of any desired width and depth, with hollow spaces running lengthwise through the outer shell. Interior "webs" divide these spaces one from the other. While the clay is still plastic the long piece is cut into blocks. Finally comes the baking. The soft blocks go into a kiln where they are

subjected to a temperature of 2,000 degrees Fahrenheit. When they are taken out several hours later, they are ready for the market — hard as stone but far more durable, proof against fire, storm, and the ravages of time.

Now let us consider, one by one, the qualities that have brought hollow tile into such high favor among architects, engineers, and contractors. The requirements for safety from fire in business structures are far stricter than in homes; and the laws governing the choice of materials for the modern "skyscraper" are the most severe of all. It follows that the material which has established itself as the best fireproofing for the "skyscraper" has passed the supreme test. The highest authorities have stamped hollow tile as the ideal fireproofing for the towering buildings that abound in the financial district of New York City, for the largest hotels, apartment houses, and theatres in the world. The terra cotta block chosen for the protection of these vast buildings is the same that is now selected for the construction of the walls and floors of the home, with this exception: it is customary to make the block intended for home-building somewhat denser, thicker and heavier than the one used in the "skyscraper."

Fire insurance underwriters are the canniest of all men in matters of fire protection and fire resistance. In Chicago is the Underwriters' Laboratory, built to afford a place for the most thorough fire tests. If there were a weak spot about this structure it would not do for the tests. *This Underwriters' Laboratory is built of terra cotta hollow tiles.*

A good saying loses none of its force from repetition, and there is one expression of judgment, by an expert, without which no discussion of the fireproofing efficiency seems complete. Major John Stephen Sewell, of the United States army, was a member of the committee sent by the Government to investigate and report upon the San Francisco fire. In his report he said:

"A conflagration never yields reliable comparative results, but from such comparative results as are available, I think there is no question that the best fire-resisting material available at the present time is the right kind of burned clay."

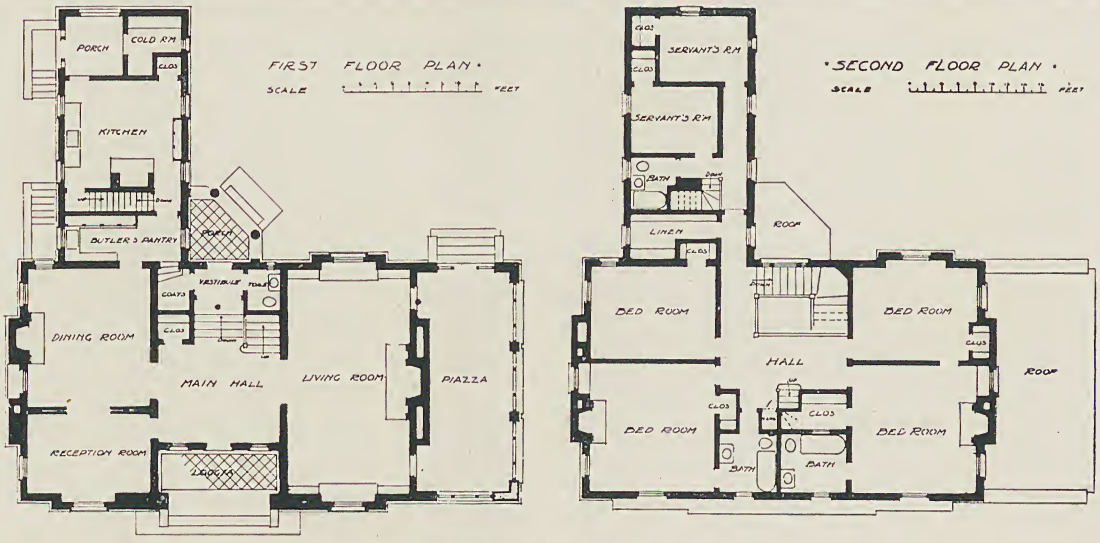
The man who builds a home wants to be sure that it is strong. At the Massachusetts Institute of Technology hollow tile was put through a test in an Emery machine. Each one of the blocks, 12 x 12 x 10 inches, sustained a load of 300,000 pounds — 5,560 pounds to the square inch of sectional area. This was the full load capacity of the machine. In no home is there a possibility of the tile's having to undergo such a strain.

Terra cotta hollow blocks are moisture-proof. Not only is the terra cotta shell itself impervious to moisture; the hollow spaces inside are a second bulwark against the attacks of wet weather.

No other wall keeps a house so warm in winter and so cool in summer as a wall of hollow terra cotta. The same physical characteristics which make the blocks non-conductors of moisture make them also non-conductors of heat. They keep the warmth from leaving when it is wanted; they keep it from entering when it is unwelcome. They cut down the fuel bills in winter, the ice bills in summer.

They are vermin-proof. Rats, bugs, worms, and other such pests find nothing in burnt clay to satisfy their appetites — no haven of rest for a weary body. They pass it by in favor of the antiquated wooden house down the street, there to pass their lives in peace and comfort until they are routed out by fire.

If you build with hollow tile, it will be as good for your grandchildren, and their grandchildren, as it is for you. It came out of the earth; it will endure as long as the earth. Not only does the hollow block last — it keeps all the strength and firmness which it won in its fiery birth. Father Time is the enemy of most building materials. He is the bosom friend of hollow tile.

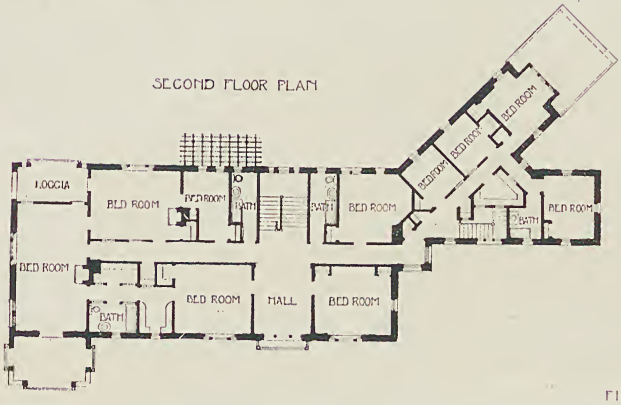


HOUSE AT SOUTH ORANGE, N. J.
(Walls of hollow tile with plaster finish)
Hill & Stout, Architects, 1123 Broadway, New York City

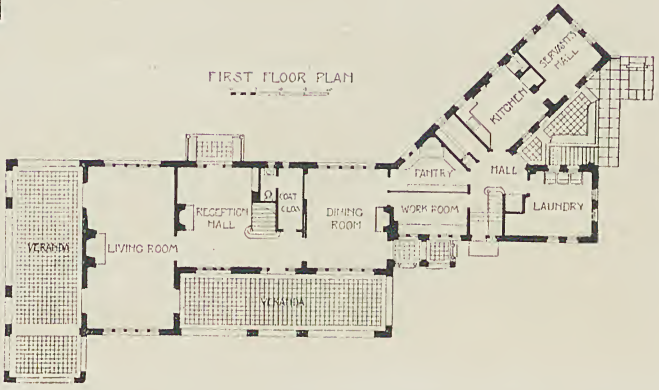
HOUSE AT
CENTER ISLAND
OYSTER BAY
L. I.

(Walls of Natco hollow tile
with plaster finish)

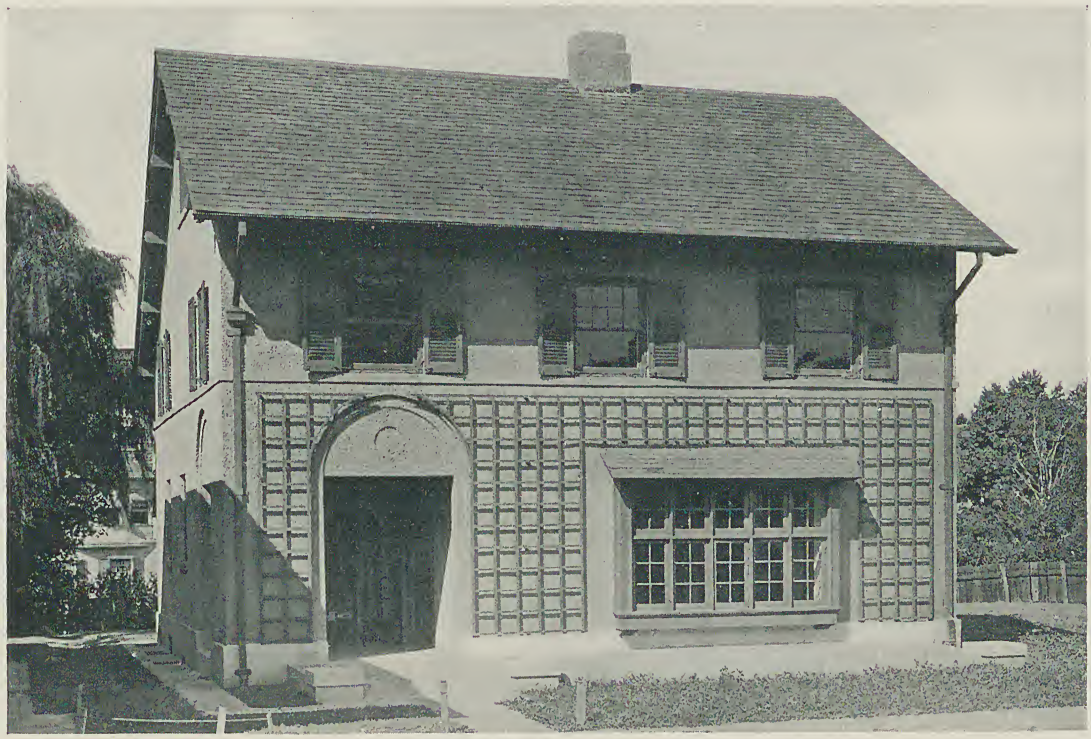
SECOND FLOOR PLAN



FIRST FLOOR PLAN

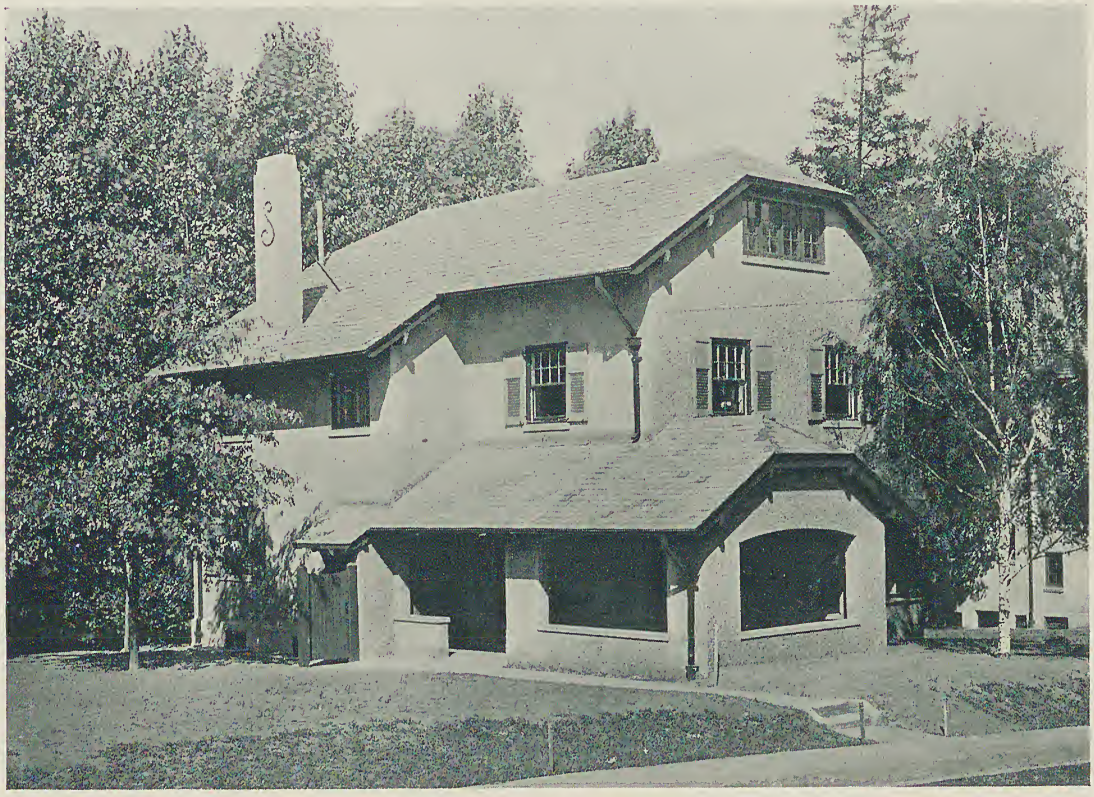


Clinton Mackenzie
Architect
82 Beaver Street
New York City



HOUSES AT ORANGE, N. J.

These houses are built of Natco tile. The walls, floors and partitions are of hollow tile. Each house cost about $7,000.
Mann & MacNeille, Architects, 12 East 45th St., New York City



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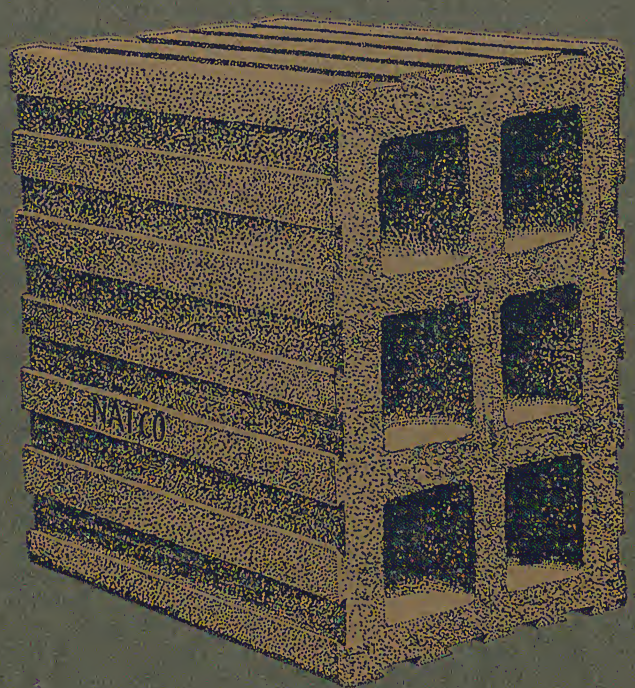
IT IS of utmost importance when a fireproof hollow tile residence or building is decided upon, to specify

NATCO·HOLLOW·TILE

and to make sure that all tile accepted bears stamped upon it the word "NATCO" as shown below.

NATCO HOLLOW TILE is the highest grade Terra Cotta Hollow Tile standardized to residence and all other constructions calling for outside walls of this material.



"NATCO" assures not only the utmost advantages of hollow tile construction, but simplifies to the greatest degree the operation of building.

This Company will be glad to furnish any information and assistance pertaining to fireproof hollow tile construction in any form.

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